

NxN OPTICAL MATRIX SWITCH

FIG. 1 PRIOR ART

OPTO-ELECTRIC
CONVERTING
CIRCUIT

$N \times N$ ELECTRIC MATRIX SWITCH

ELECTRO-OPTIC
CONVERTING
CIRCUIT

FIG. 2 PRIOR ART

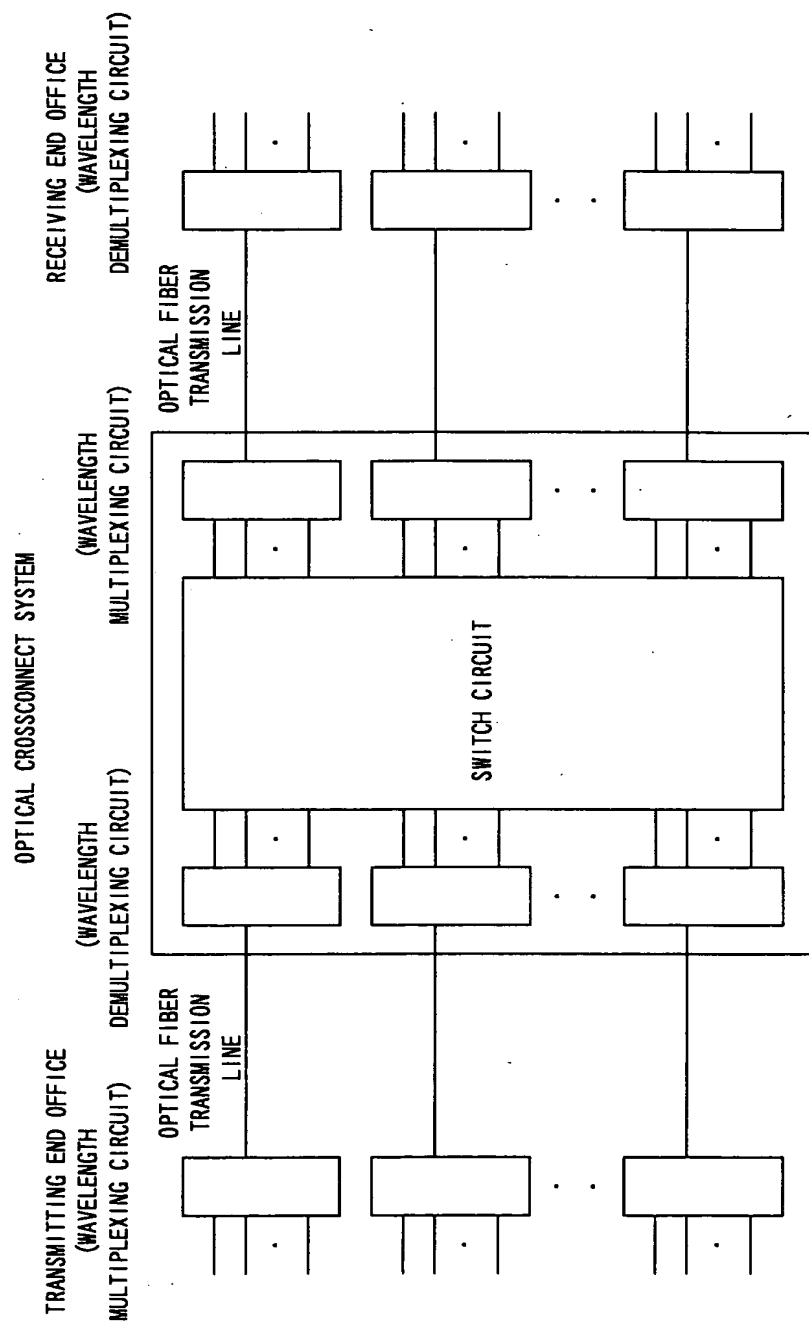


FIG. 3 PRIOR ART

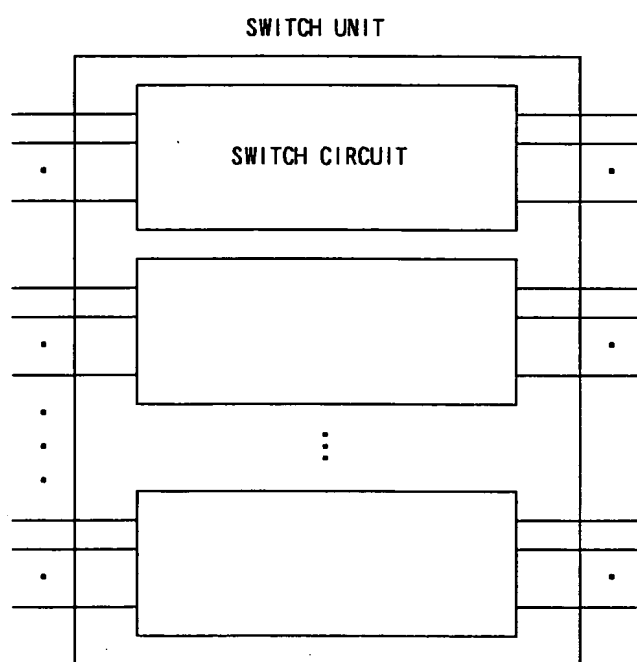


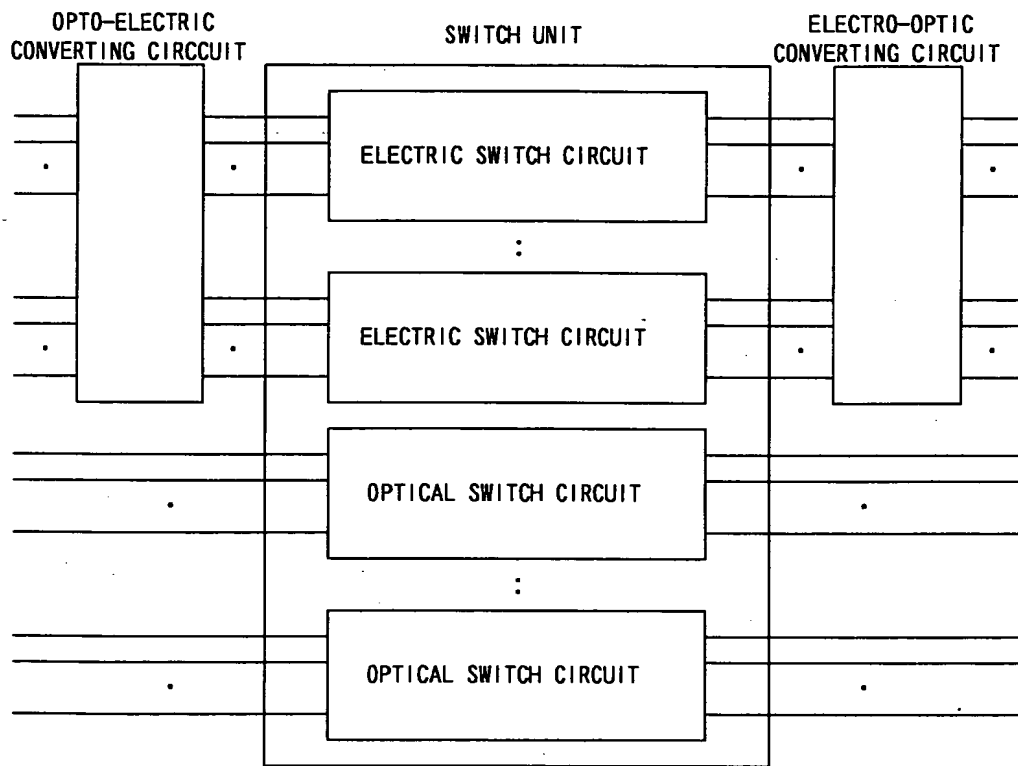
FIG. 4

The diagram illustrates a multi-channel optical switch system. It is organized into three main vertical sections: an input section on the left, a central switch unit, and an output section on the right.

- Input Section (OPTO-ELECTRIC CONVERTING CIRCUIT):** A vertical column of rectangular blocks. Each block has a small dot on its left side, representing an input signal. These blocks are connected to the central switch unit.
- Central Switch Unit (SWITCH UNIT):** A large rectangular area containing three smaller rectangular blocks stacked vertically. The top block is labeled "ELECTRIC SWITCH CIRCUIT". The middle block is empty. Below the middle block are three vertical dots, indicating a continuation of the switch unit. The bottom block is also empty. This unit is flanked by two vertical columns of small dots, representing internal switching elements or control lines.
- Output Section (ELECTRO-OPTIC CONVERTING CIRCUIT):** A vertical column of rectangular blocks. Each block has a small dot on its right side, representing an output signal. These blocks are connected to the central switch unit.

Horizontal lines connect the input blocks to the switch unit, and the switch unit to the output blocks, showing the flow of information through the system.

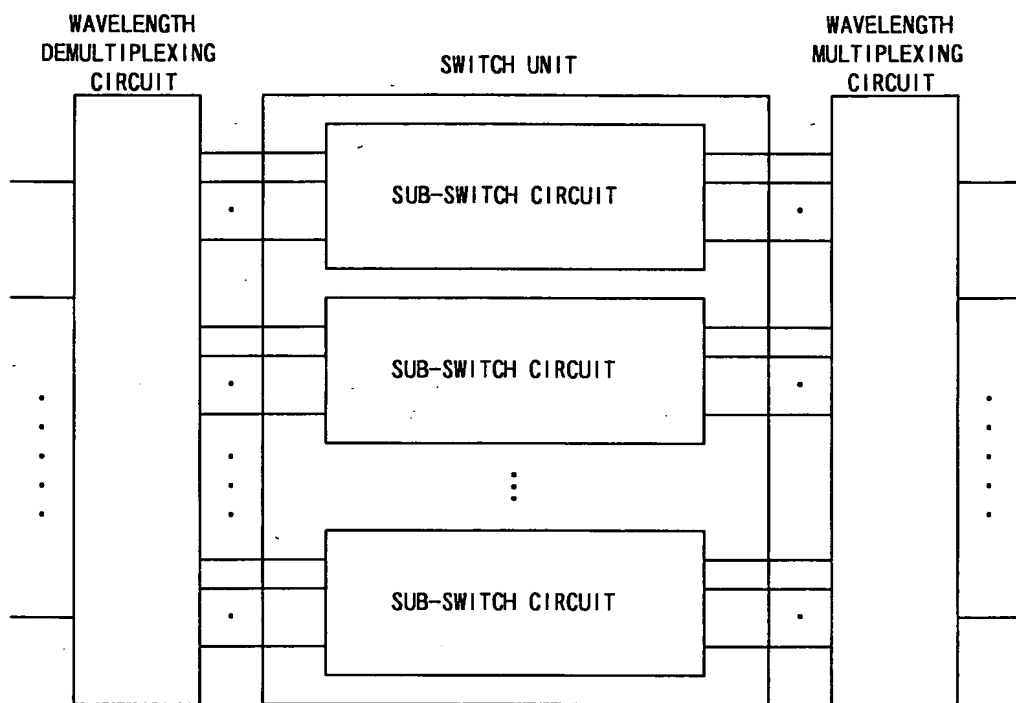
FIG. 5



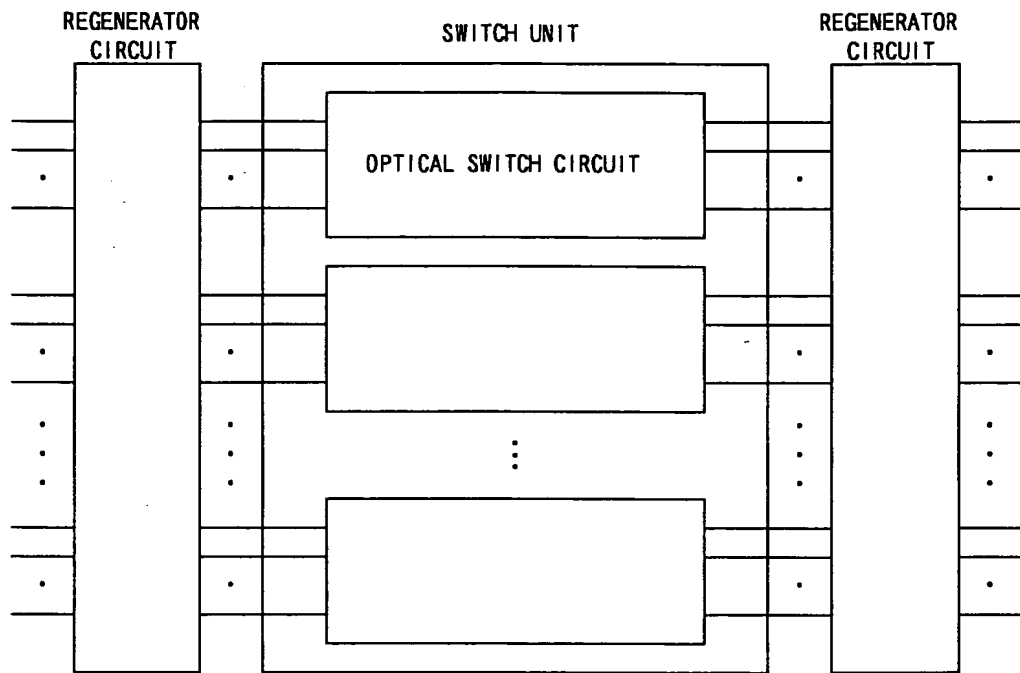
F I G. 6

The diagram illustrates a multi-channel switching system. It is organized into three main vertical sections: **OPTO-ELECTRIC CONVERTING CIRCUIT** on the left, **SWITCH UNIT** in the center, and **ELECTRO-OPTIC CONVERTING CIRCUIT** on the right. Each section contains a vertical bar representing the circuit. The system is divided into three horizontal channels, labeled **A**, **B**, and **C**. Channel A contains an **ELECTRIC SWITCH CIRCUIT A**, Channel B contains an **ELECTRIC SWITCH CIRCUIT B**, and Channel C contains an **ELECTRIC SWITCH CIRCUIT C**. Vertical lines connect the input/output points of the converting circuits to the corresponding switch circuits. Small dots are placed at the connection points between the vertical bars and the horizontal lines. Vertical ellipses (**:**) are used to indicate that the structure is repeated for multiple channels.

FIG. 7



F I G. 8



F I G. 9

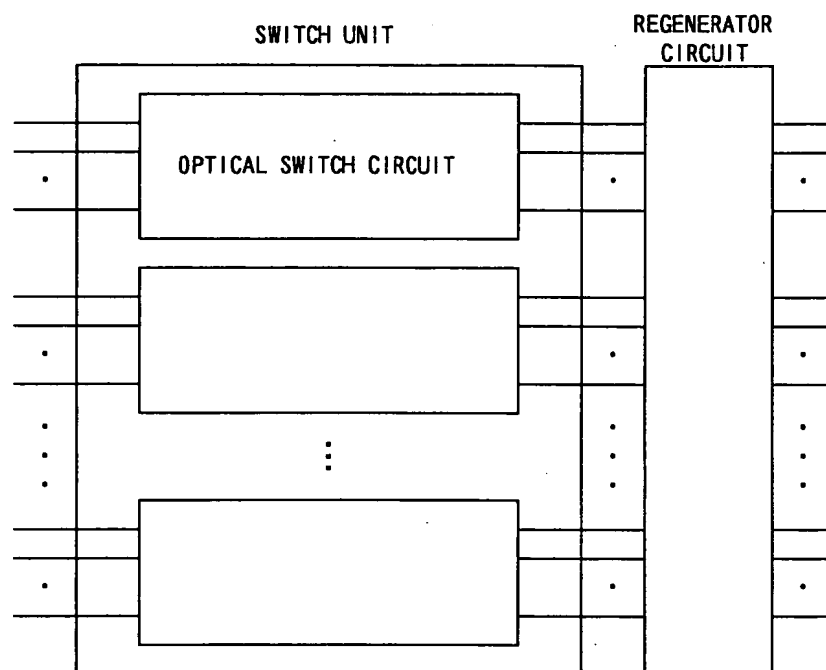


FIG. 10

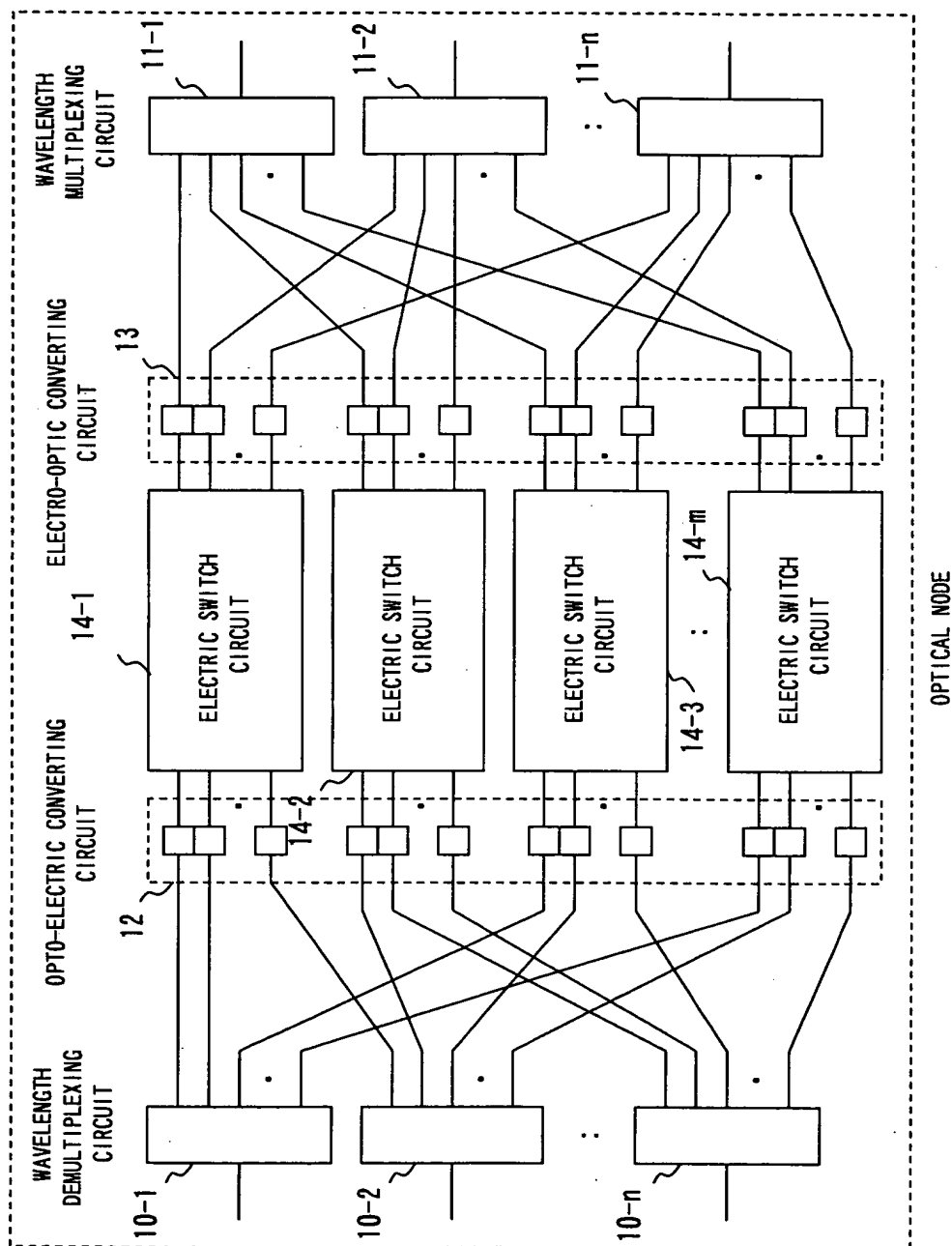


FIG. 11

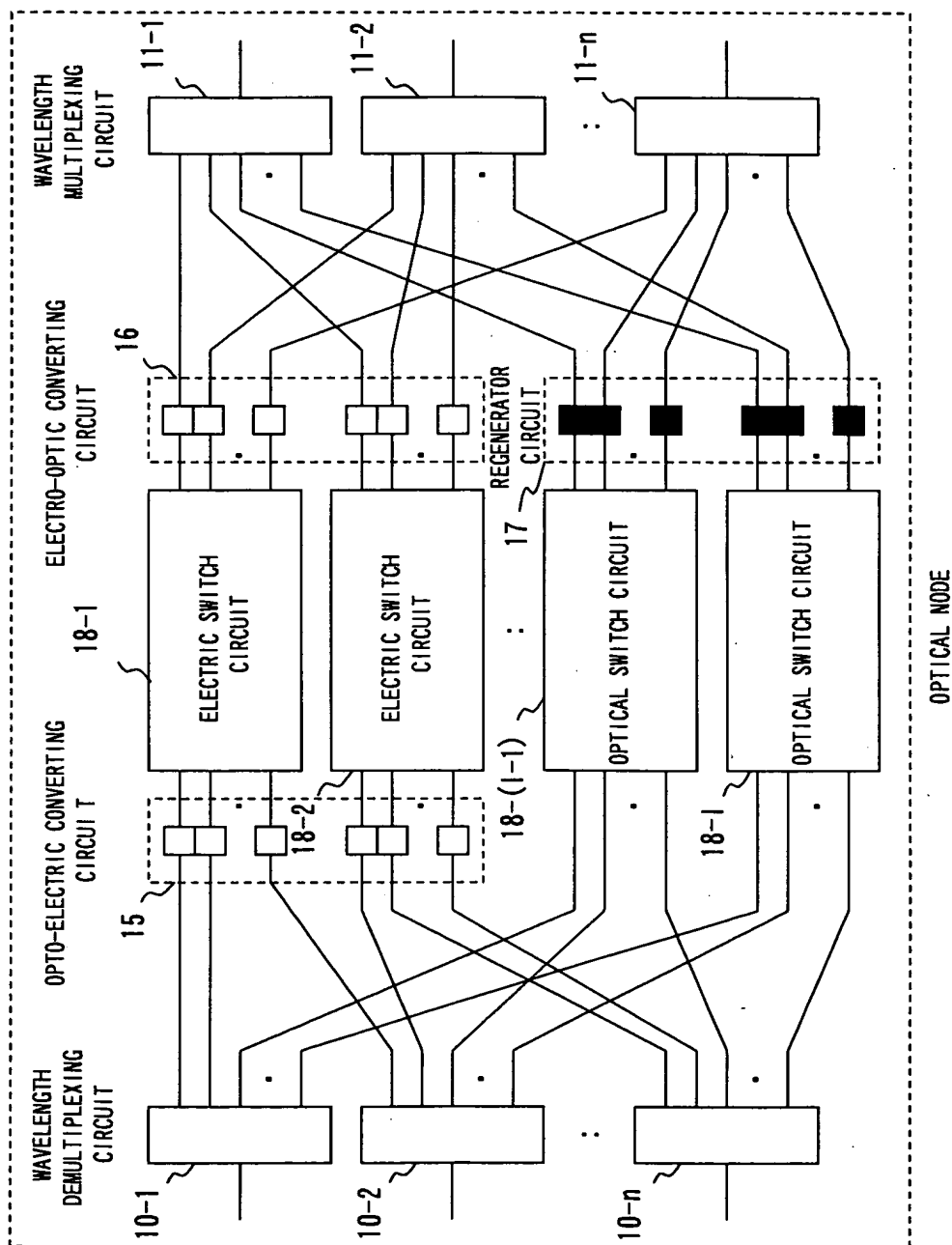


FIG. 12

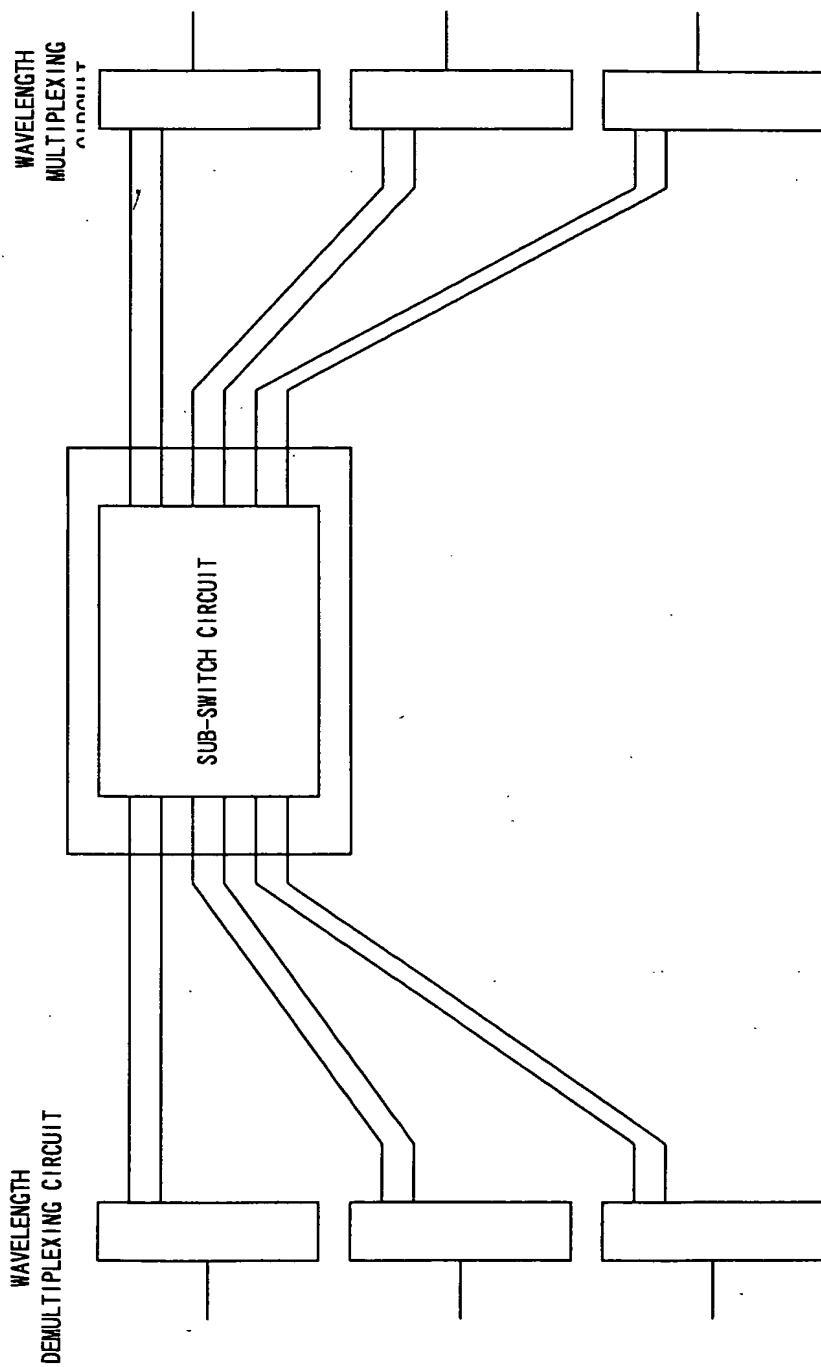


FIG. 13

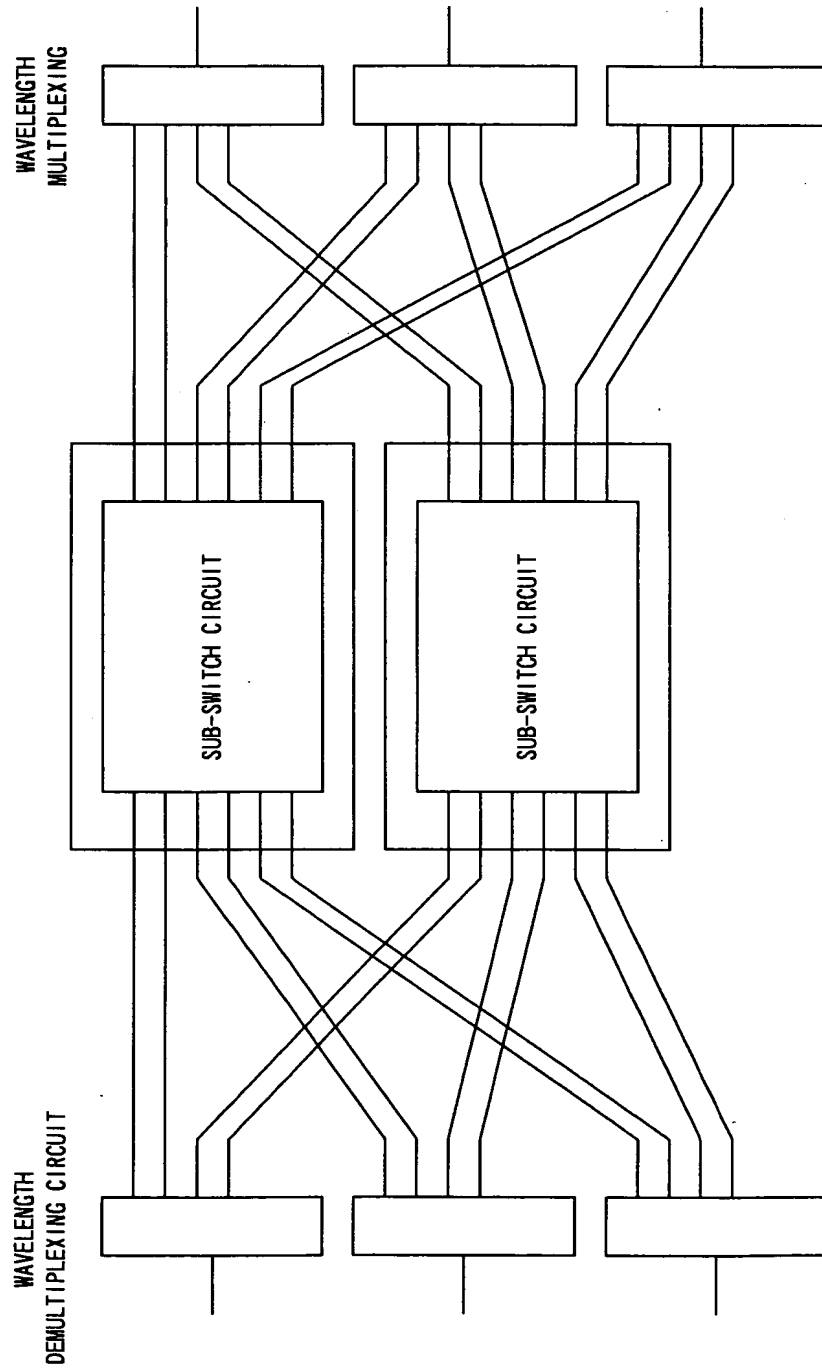


FIG. 14

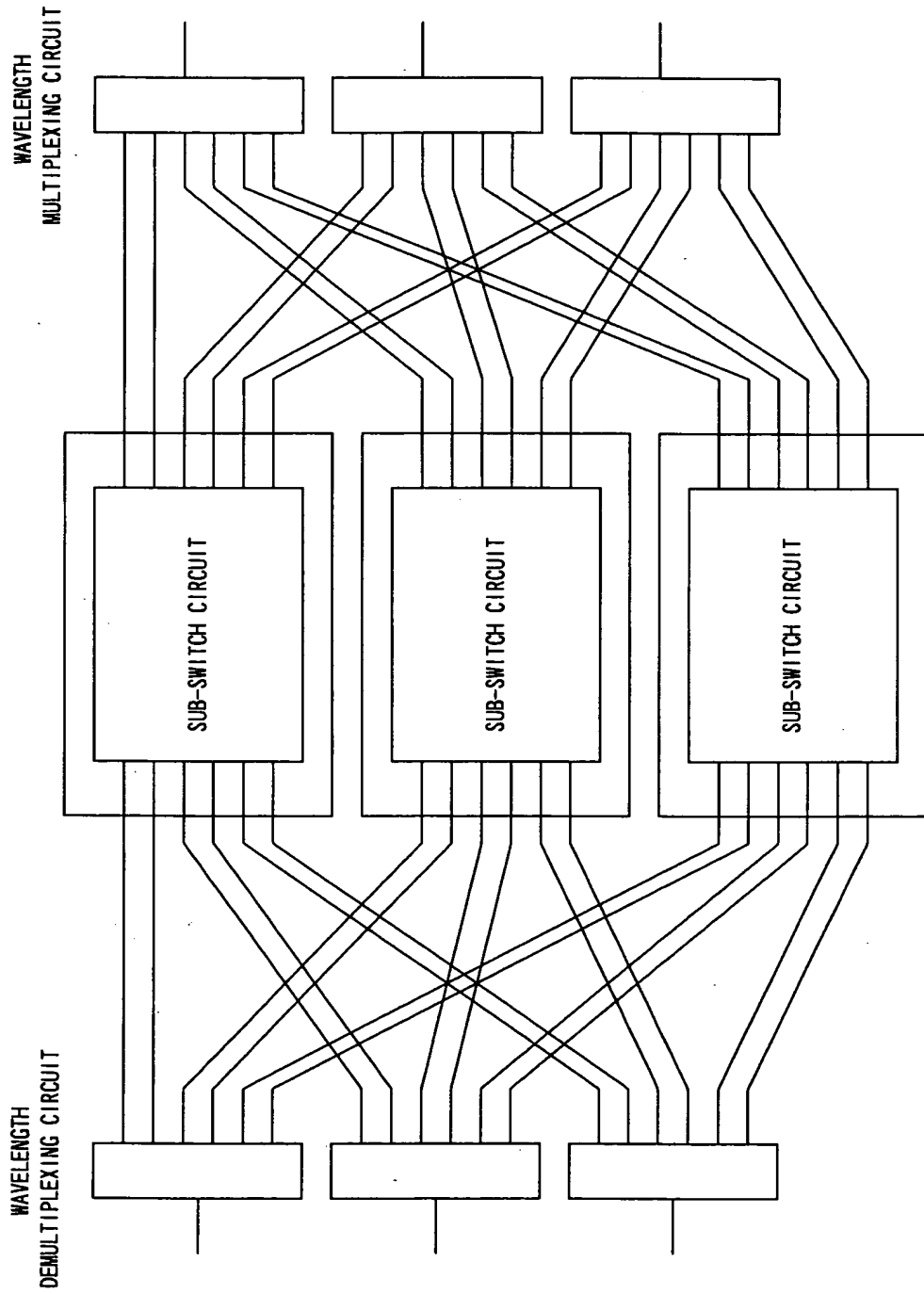
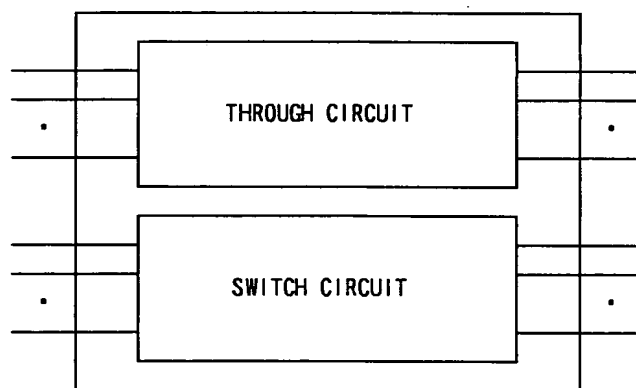


FIG. 15



F I G. 1 6

The diagram shows a multi-stage circuit with three stages. The first stage is labeled "THROUGH CIRCUIT". The second stage is labeled "SWITCH CIRCUIT". The third stage is labeled "SWITCH CIRCUIT". Each stage has four input lines on the left and four output lines on the right. The output of the first stage is connected to the input of the second stage, and the output of the second stage is connected to the input of the third stage. The output of the third stage is connected to the input of the fourth stage, which is not shown. The diagram is enclosed in a rectangular frame.

FIG. 17

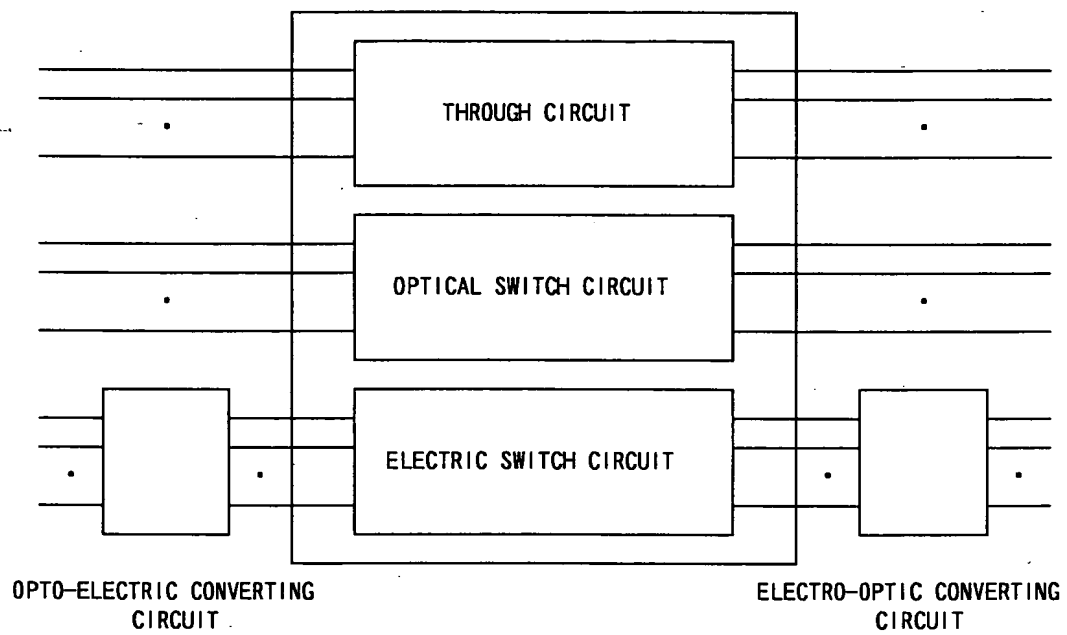


FIG. 18

1. The first part of the document is a list of references. The references are listed in a vertical column on the left side of the page. The references are:

- 1. The first part of the document is a list of references. The references are listed in a vertical column on the left side of the page. The references are:

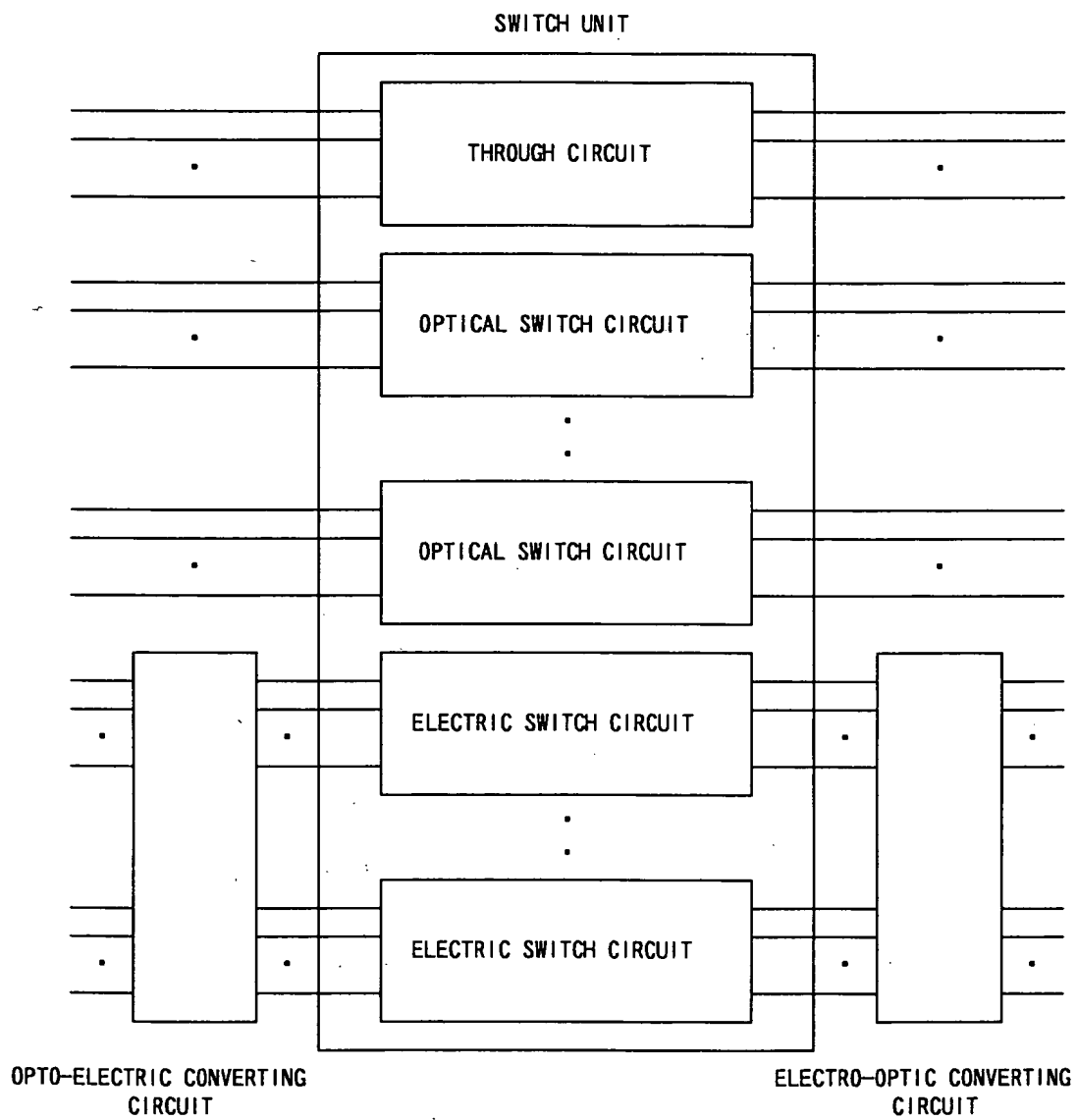
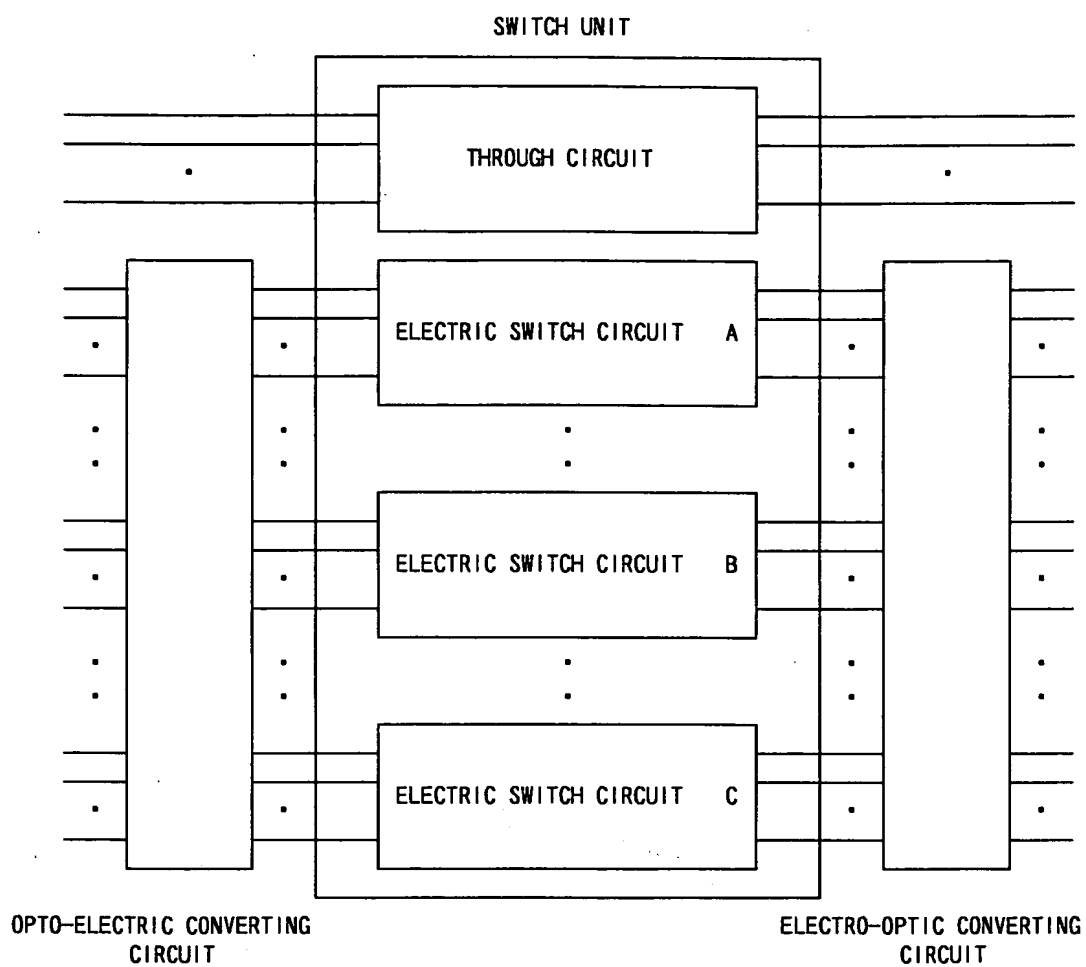


FIG. 19

000001-324460



F I G . 2 0

SWITCH UNIT

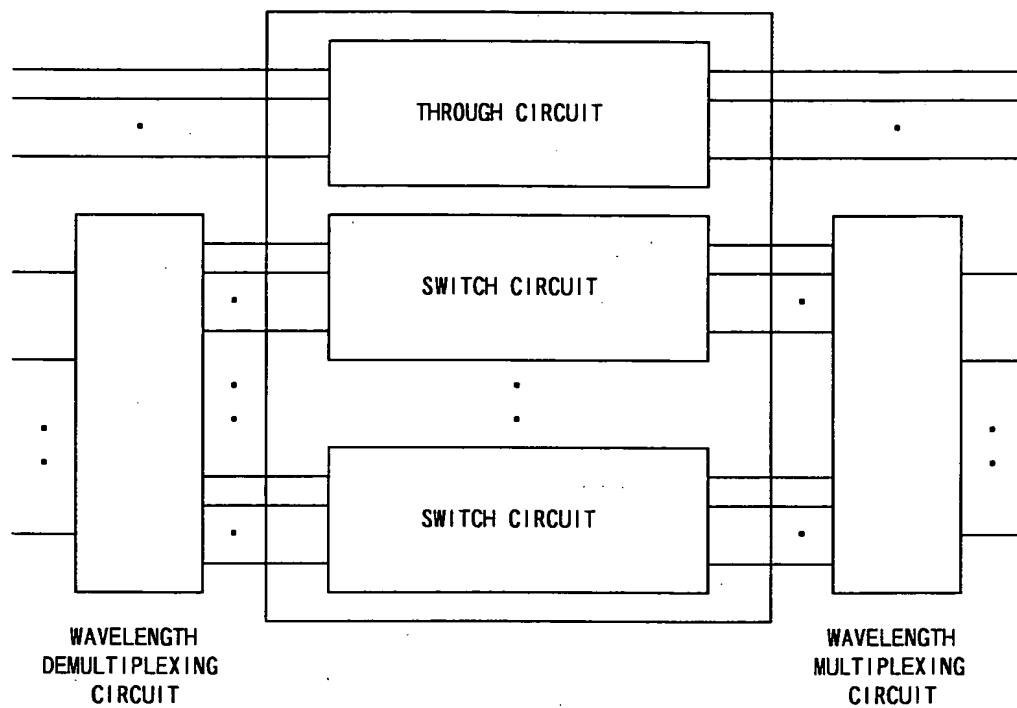
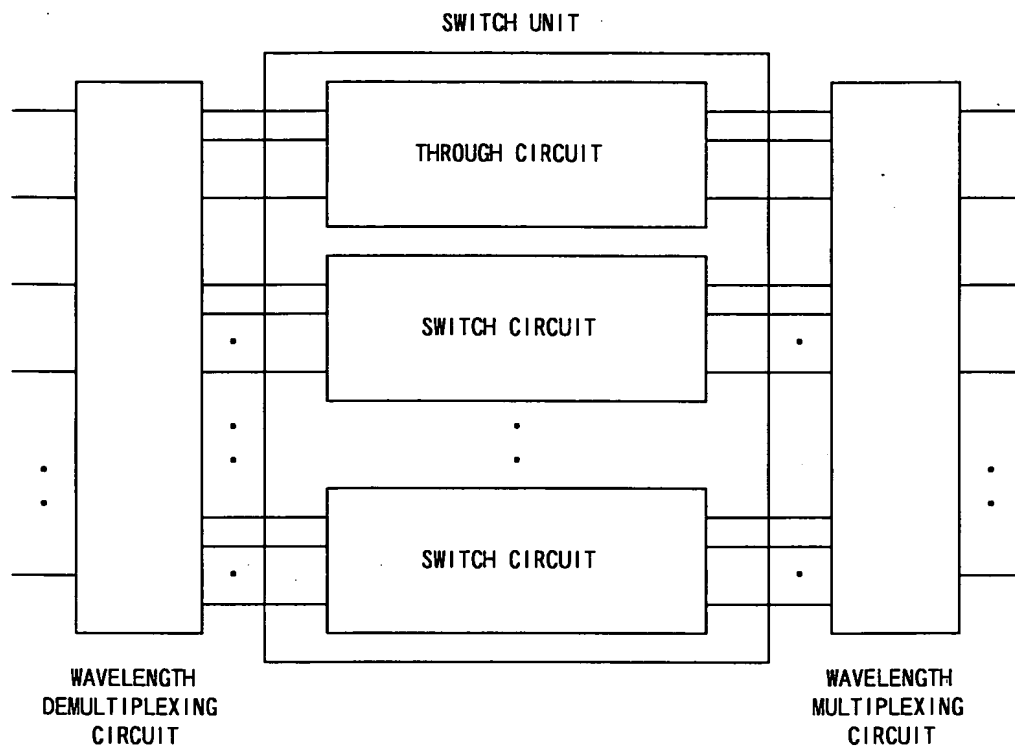


FIG. 21



F I G. 2 2

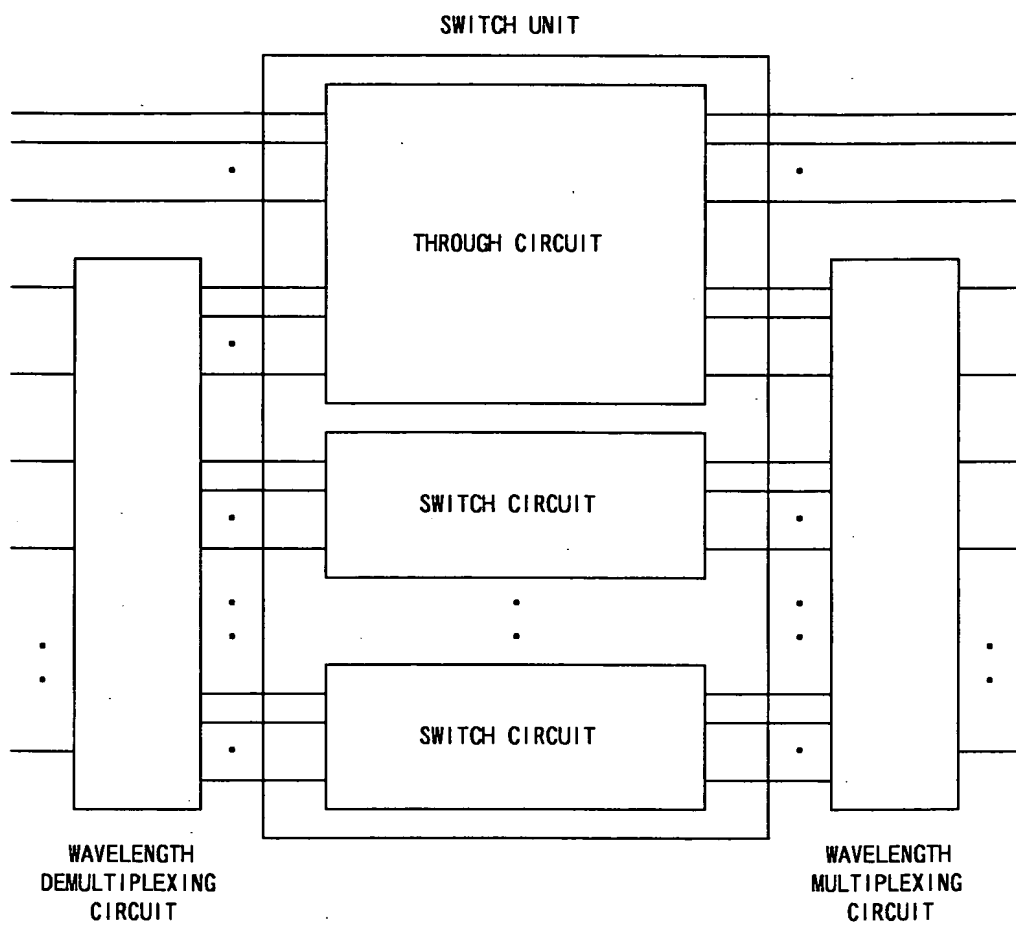


FIG. 23

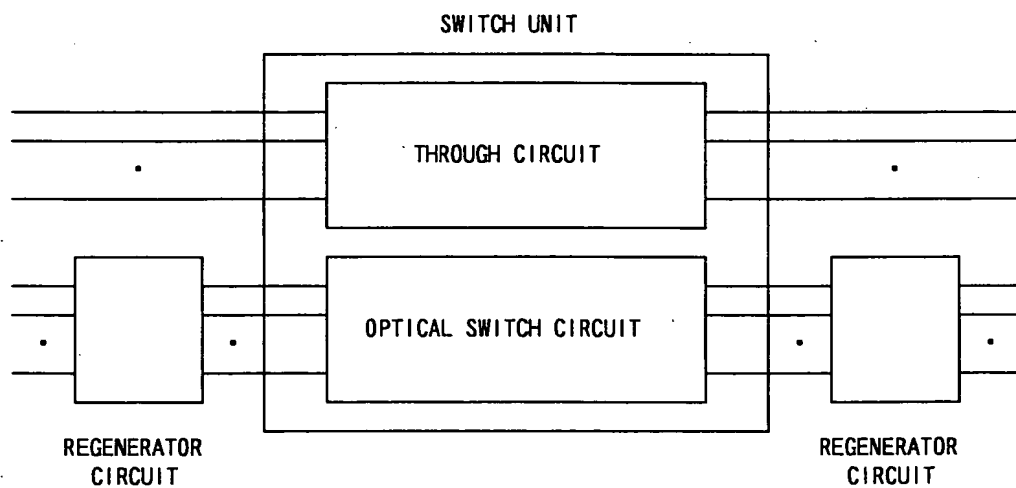


FIG. 24

$\{f_{\alpha}^{(1)}\}$ $\{f_{\alpha}^{(2)}\}$ $\{f_{\alpha}^{(3)}\}$ $\{f_{\alpha}^{(4)}\}$ $\{f_{\alpha}^{(5)}\}$ $\{f_{\alpha}^{(6)}\}$ $\{f_{\alpha}^{(7)}\}$ $\{f_{\alpha}^{(8)}\}$ $\{f_{\alpha}^{(9)}\}$ $\{f_{\alpha}^{(10)}\}$ $\{f_{\alpha}^{(11)}\}$ $\{f_{\alpha}^{(12)}\}$ $\{f_{\alpha}^{(13)}\}$ $\{f_{\alpha}^{(14)}\}$ $\{f_{\alpha}^{(15)}\}$ $\{f_{\alpha}^{(16)}\}$ $\{f_{\alpha}^{(17)}\}$ $\{f_{\alpha}^{(18)}\}$ $\{f_{\alpha}^{(19)}\}$ $\{f_{\alpha}^{(20)}\}$ $\{f_{\alpha}^{(21)}\}$ $\{f_{\alpha}^{(22)}\}$ $\{f_{\alpha}^{(23)}\}$ $\{f_{\alpha}^{(24)}\}$ $\{f_{\alpha}^{(25)}\}$ $\{f_{\alpha}^{(26)}\}$ $\{f_{\alpha}^{(27)}\}$ $\{f_{\alpha}^{(28)}\}$ $\{f_{\alpha}^{(29)}\}$ $\{f_{\alpha}^{(30)}\}$ $\{f_{\alpha}^{(31)}\}$ $\{f_{\alpha}^{(32)}\}$ $\{f_{\alpha}^{(33)}\}$ $\{f_{\alpha}^{(34)}\}$ $\{f_{\alpha}^{(35)}\}$ $\{f_{\alpha}^{(36)}\}$ $\{f_{\alpha}^{(37)}\}$ $\{f_{\alpha}^{(38)}\}$ $\{f_{\alpha}^{(39)}\}$ $\{f_{\alpha}^{(40)}\}$ $\{f_{\alpha}^{(41)}\}$ $\{f_{\alpha}^{(42)}\}$ $\{f_{\alpha}^{(43)}\}$ $\{f_{\alpha}^{(44)}\}$ $\{f_{\alpha}^{(45)}\}$ $\{f_{\alpha}^{(46)}\}$ $\{f_{\alpha}^{(47)}\}$ $\{f_{\alpha}^{(48)}\}$ $\{f_{\alpha}^{(49)}\}$ $\{f_{\alpha}^{(50)}\}$ $\{f_{\alpha}^{(51)}\}$ $\{f_{\alpha}^{(52)}\}$ $\{f_{\alpha}^{(53)}\}$ $\{f_{\alpha}^{(54)}\}$ $\{f_{\alpha}^{(55)}\}$ $\{f_{\alpha}^{(56)}\}$ $\{f_{\alpha}^{(57)}\}$ $\{f_{\alpha}^{(58)}\}$ $\{f_{\alpha}^{(59)}\}$ $\{f_{\alpha}^{(60)}\}$ $\{f_{\alpha}^{(61)}\}$ $\{f_{\alpha}^{(62)}\}$ $\{f_{\alpha}^{(63)}\}$ $\{f_{\alpha}^{(64)}\}$ $\{f_{\alpha}^{(65)}\}$ $\{f_{\alpha}^{(66)}\}$ $\{f_{\alpha}^{(67)}\}$ $\{f_{\alpha}^{(68)}\}$ $\{f_{\alpha}^{(69)}\}$ $\{f_{\alpha}^{(70)}\}$ $\{f_{\alpha}^{(71)}\}$ $\{f_{\alpha}^{(72)}\}$ $\{f_{\alpha}^{(73)}\}$ $\{f_{\alpha}^{(74)}\}$ $\{f_{\alpha}^{(75)}\}$ $\{f_{\alpha}^{(76)}\}$ $\{f_{\alpha}^{(77)}\}$ $\{f_{\alpha}^{(78)}\}$ $\{f_{\alpha}^{(79)}\}$ $\{f_{\alpha}^{(80)}\}$ $\{f_{\alpha}^{(81)}\}$ $\{f_{\alpha}^{(82)}\}$ $\{f_{\alpha}^{(83)}\}$ $\{f_{\alpha}^{(84)}\}$ $\{f_{\alpha}^{(85)}\}$ $\{f_{\alpha}^{(86)}\}$ $\{f_{\alpha}^{(87)}\}$ $\{f_{\alpha}^{(88)}\}$ $\{f_{\alpha}^{(89)}\}$ $\{f_{\alpha}^{(90)}\}$ $\{f_{\alpha}^{(91)}\}$ $\{f_{\alpha}^{(92)}\}$ $\{f_{\alpha}^{(93)}\}$ $\{f_{\alpha}^{(94)}\}$ $\{f_{\alpha}^{(95)}\}$ $\{f_{\alpha}^{(96)}\}$ $\{f_{\alpha}^{(97)}\}$ $\{f_{\alpha}^{(98)}\}$ $\{f_{\alpha}^{(99)}\}$ $\{f_{\alpha}^{(100)}\}$

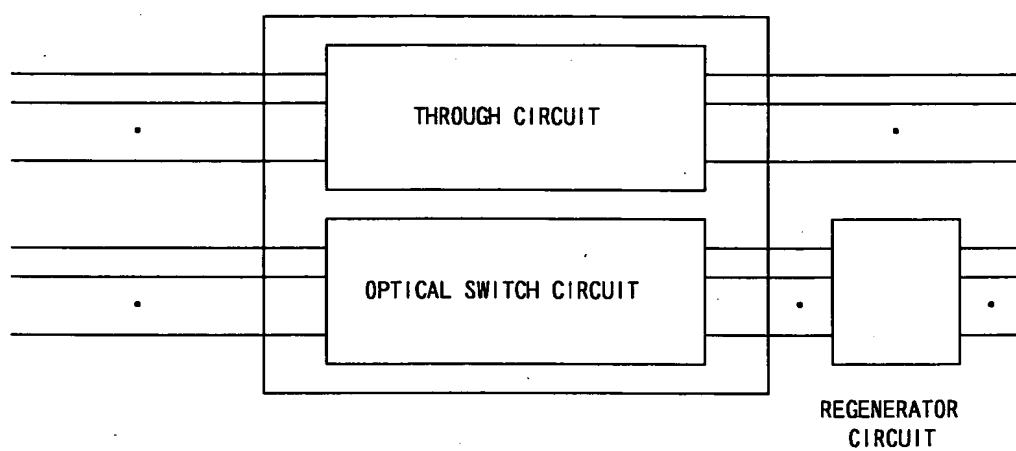


FIG. 25

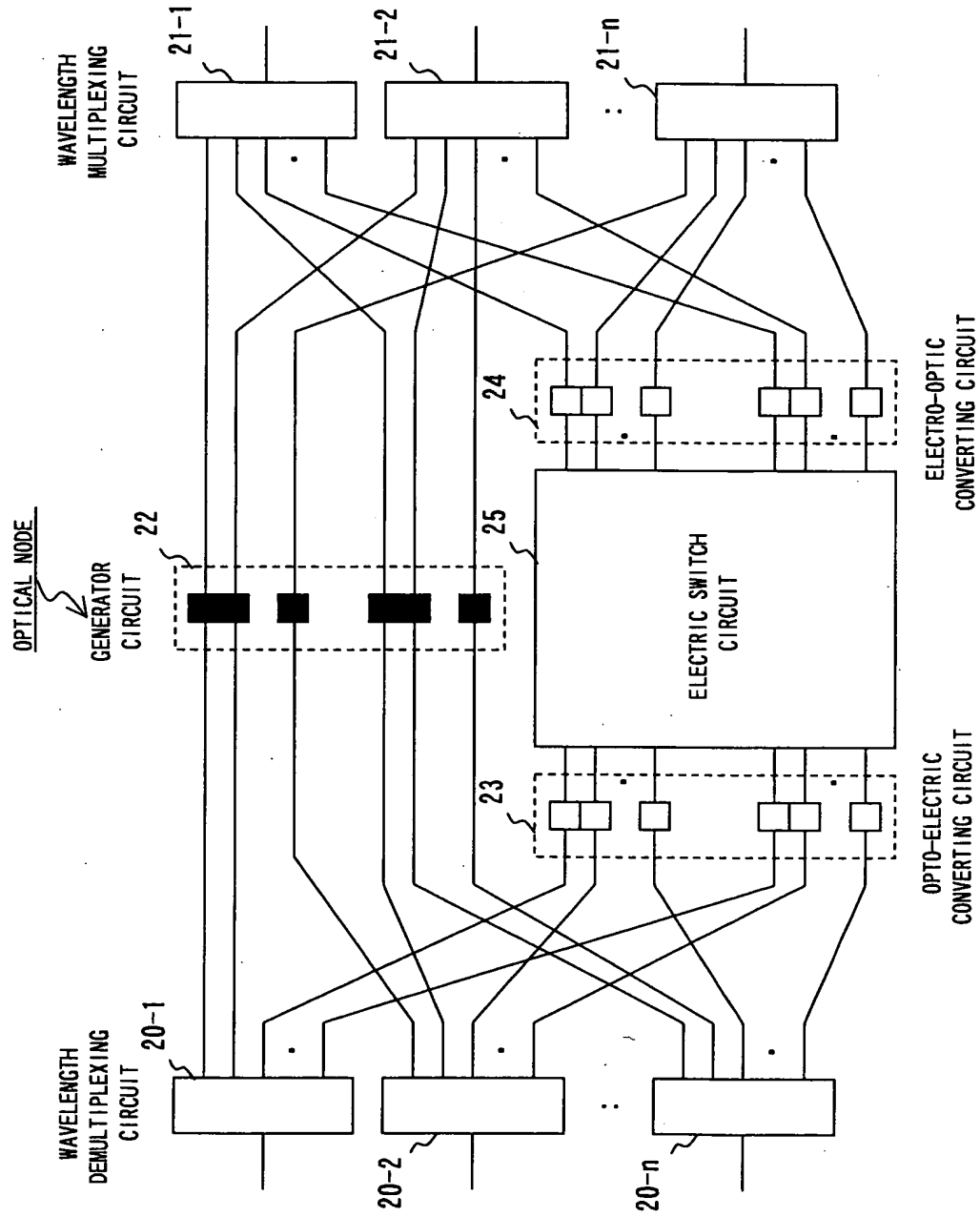


FIG. 26

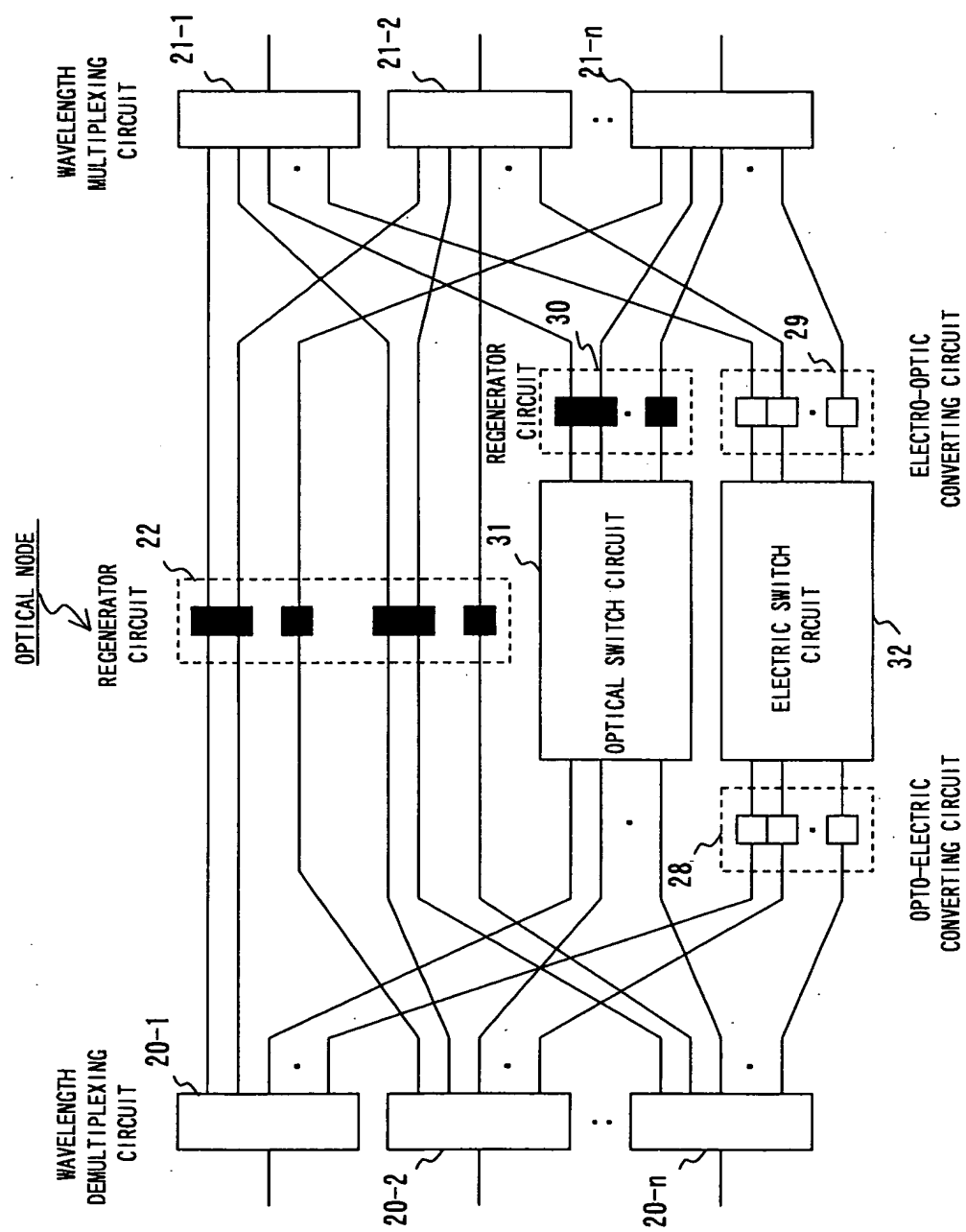
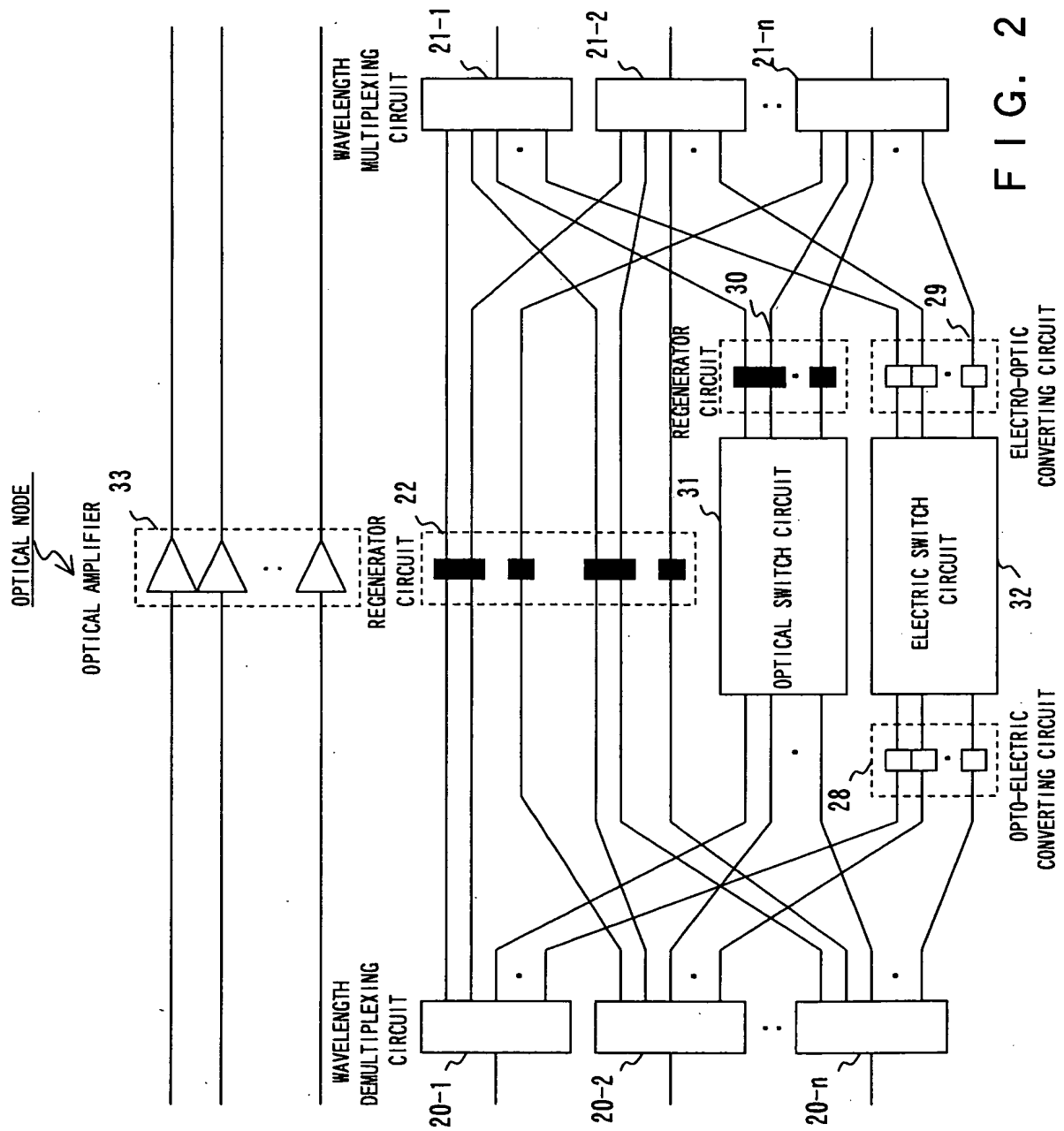


FIG. 27



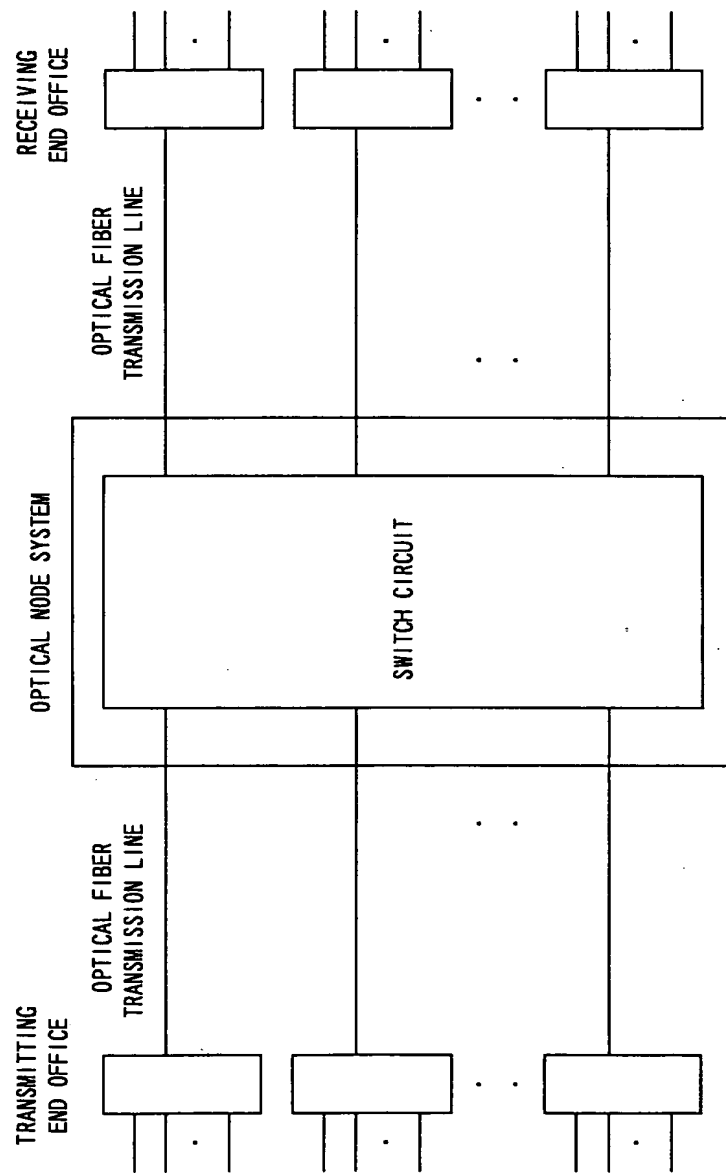
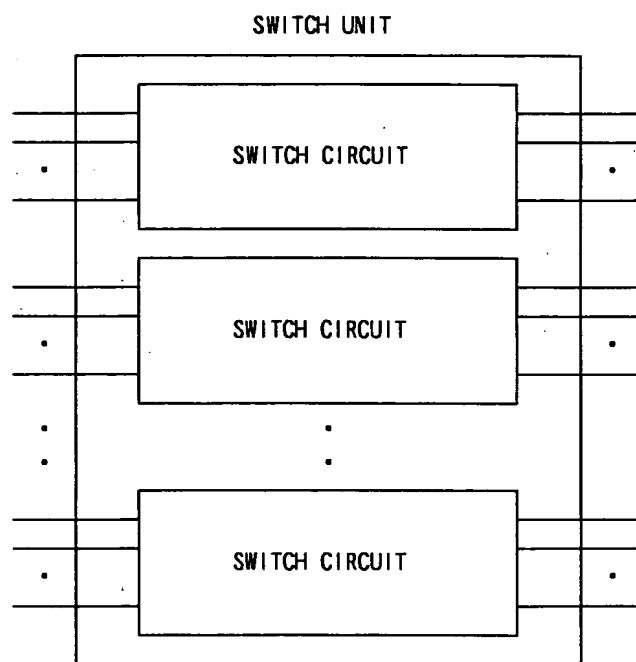
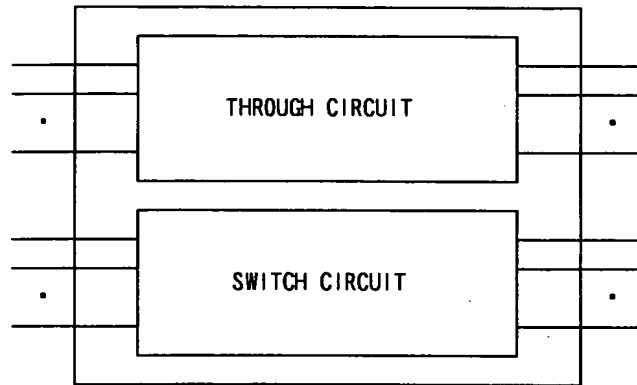


FIG. 29



F I G. 3 0

008227" sheet 460



F I G. 3 1

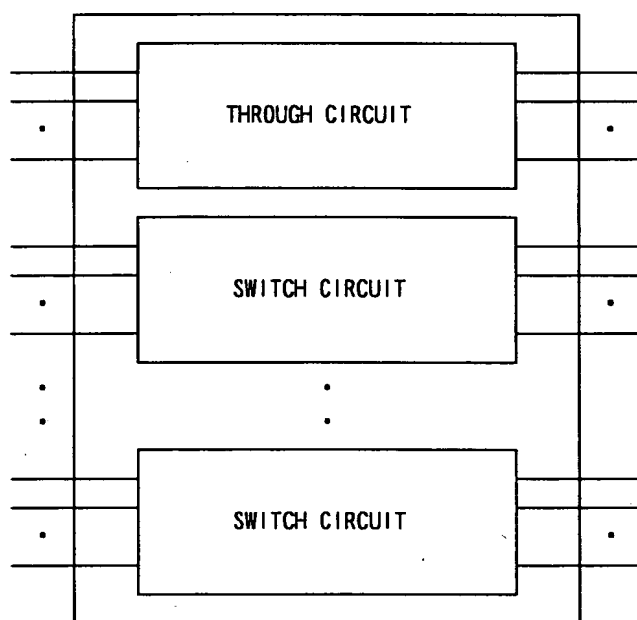


FIG. 32

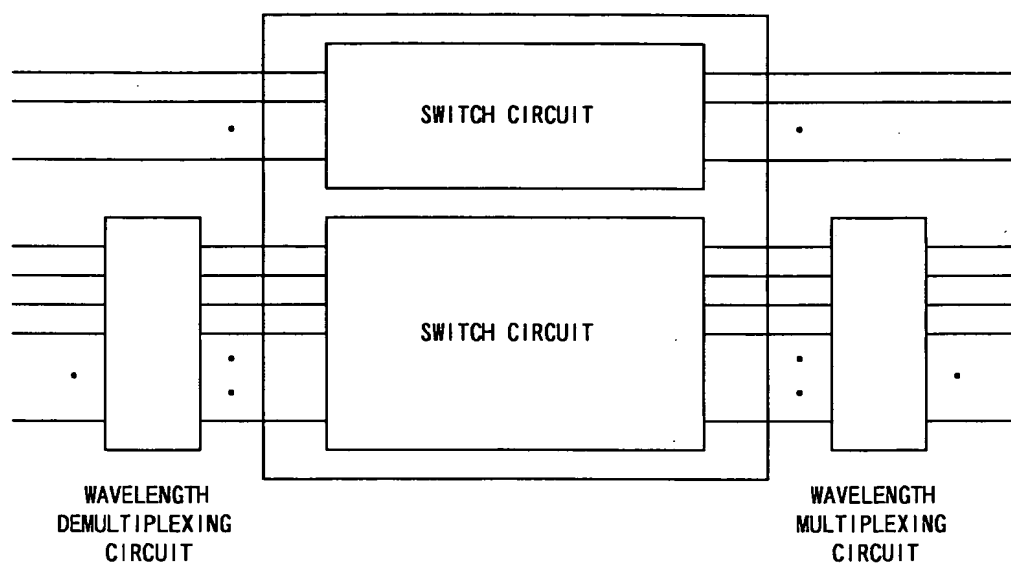
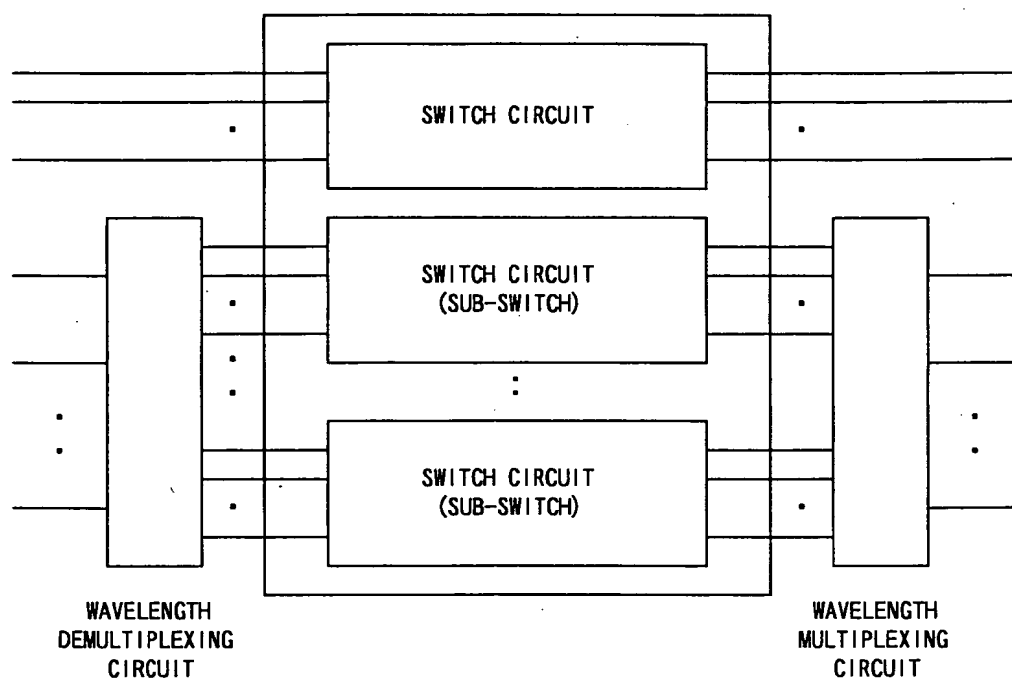


FIG. 33



F I G. 3 4

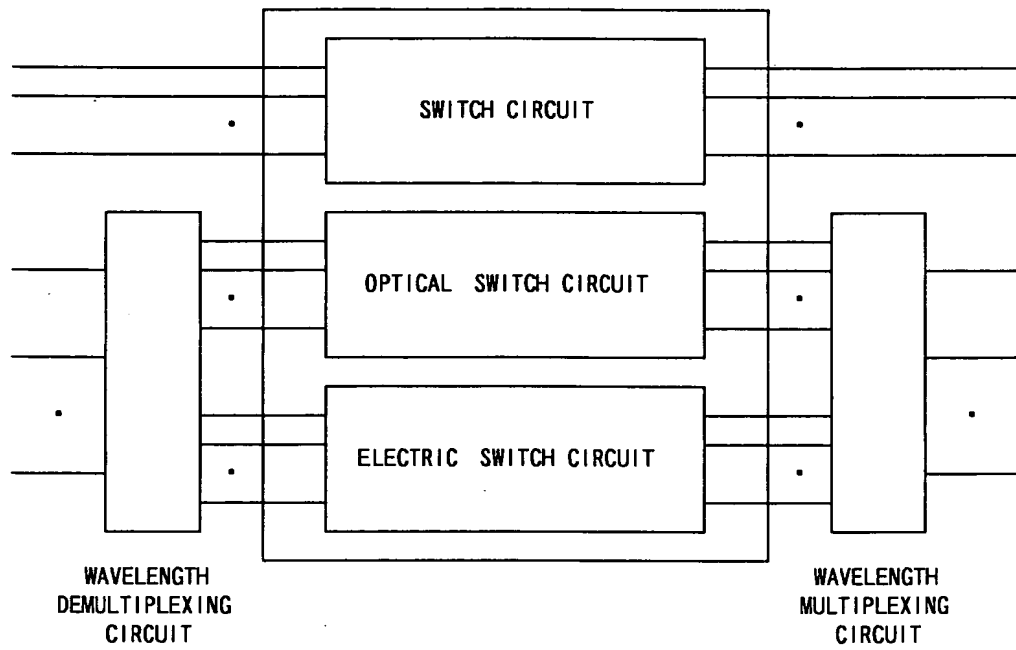
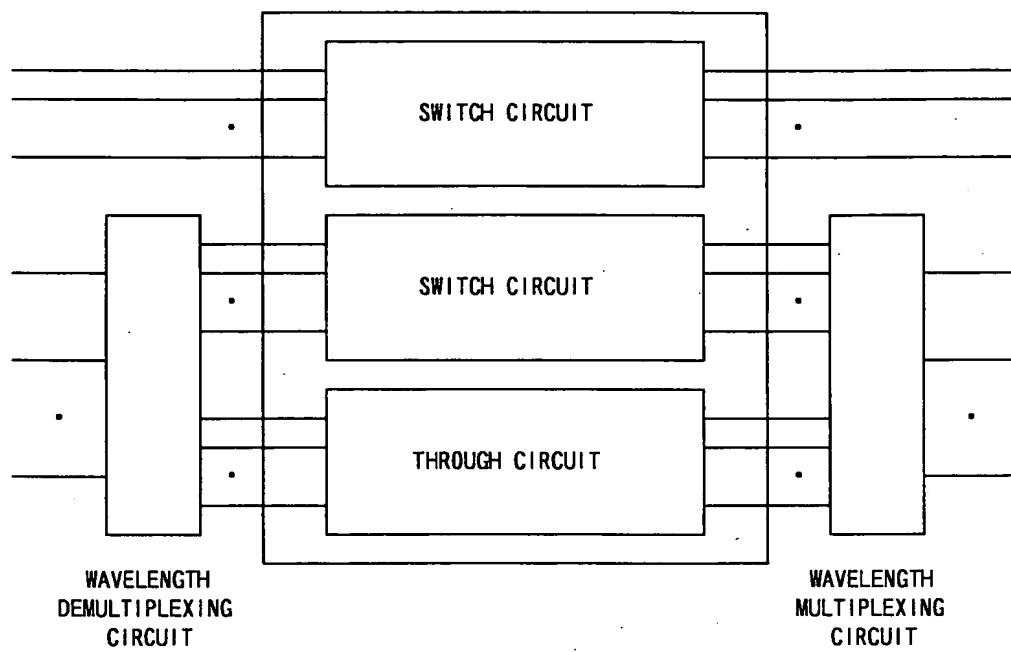
[illegible]

FIG. 35



F I G . 3 6

WDM THROUGH CIRCUIT

WDM SWITCH CIRCUIT

WAVELENGTH SWITCH CIRCUIT

WAVELENGTH DEMULTIPLEXING CIRCUIT

WAVELENGTH MULTIPLEXING CIRCUIT

FIG. 37

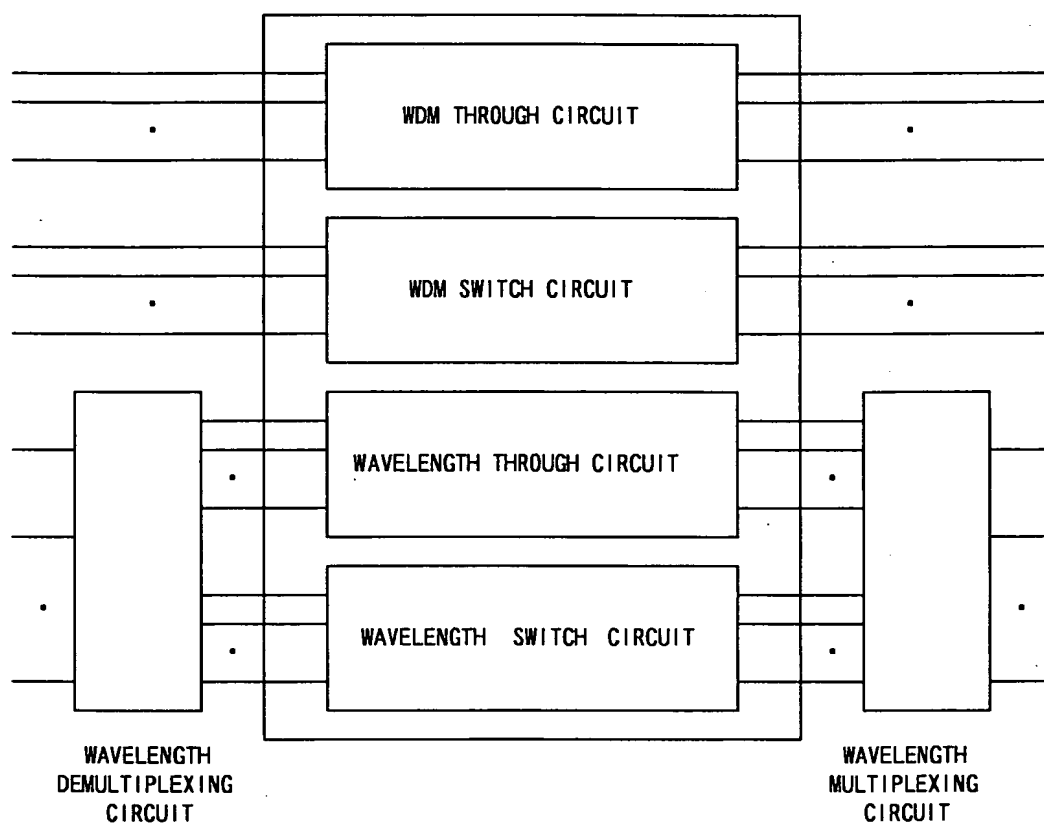


FIG. 38

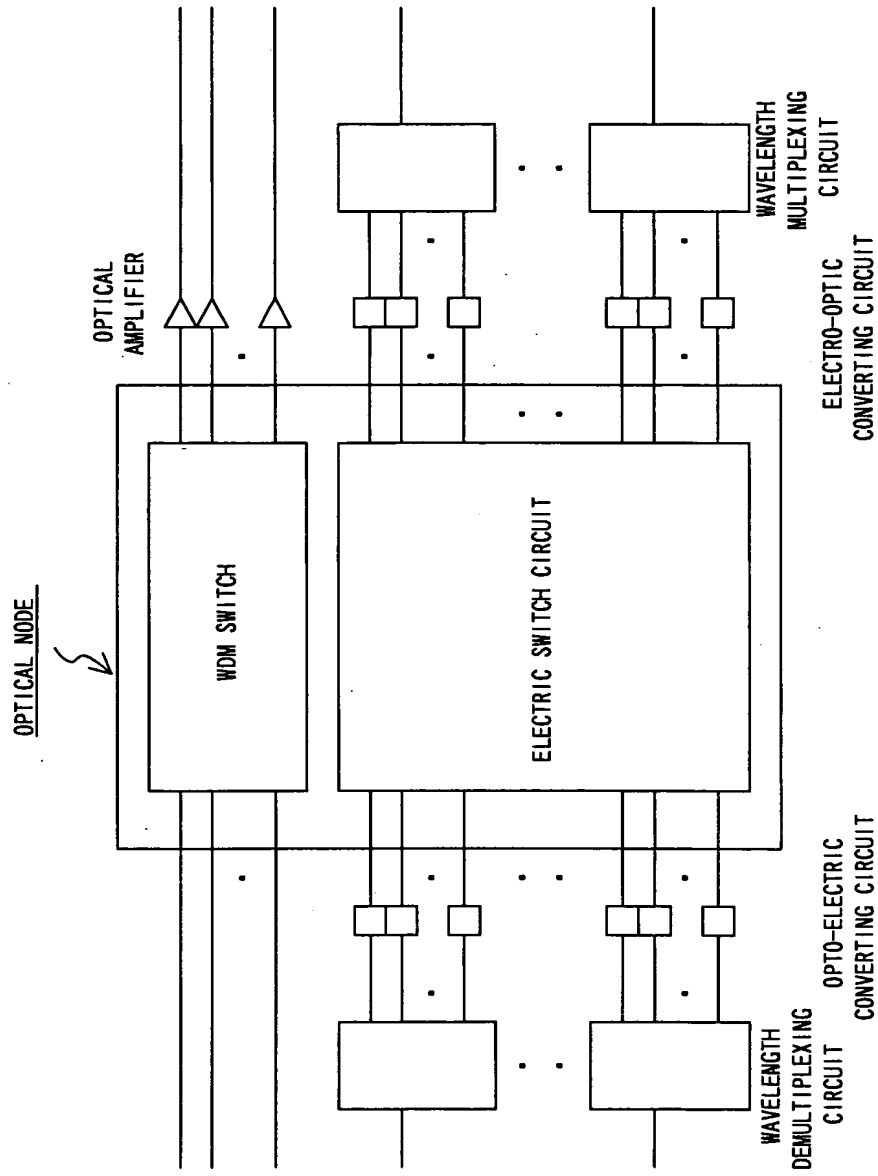


FIG. 39

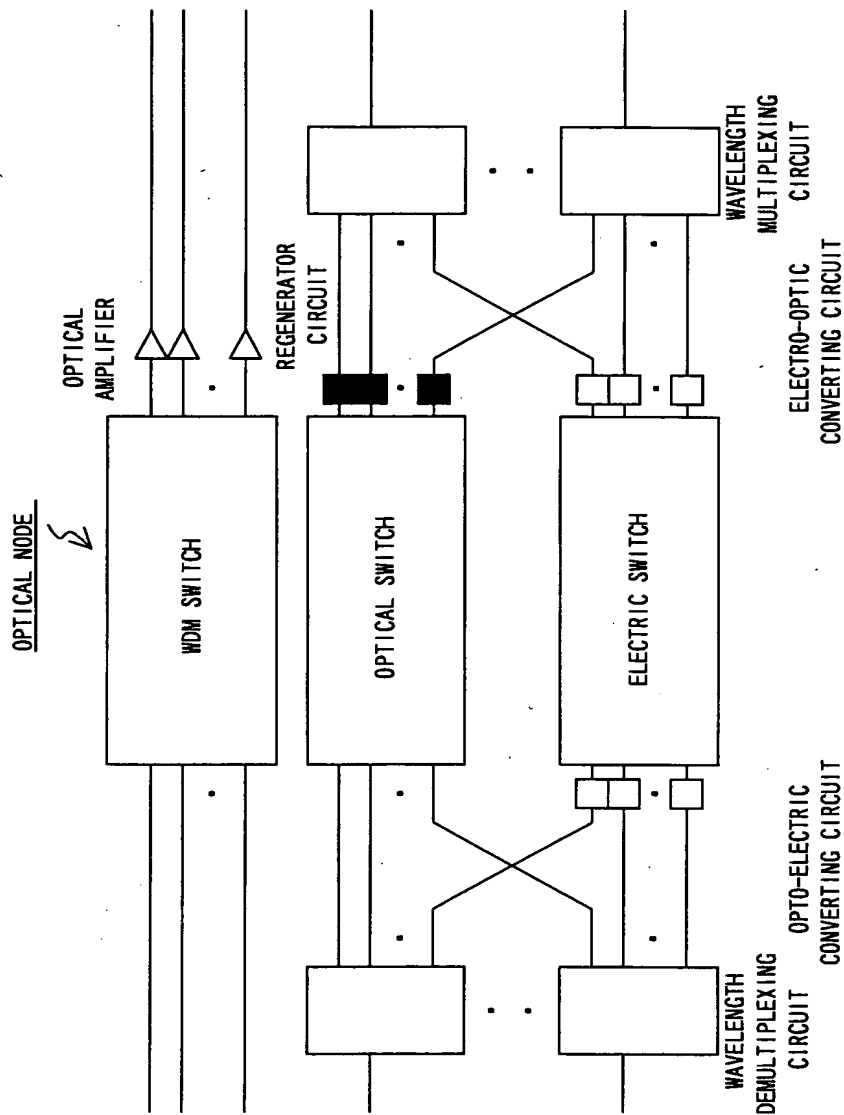


FIG. 40

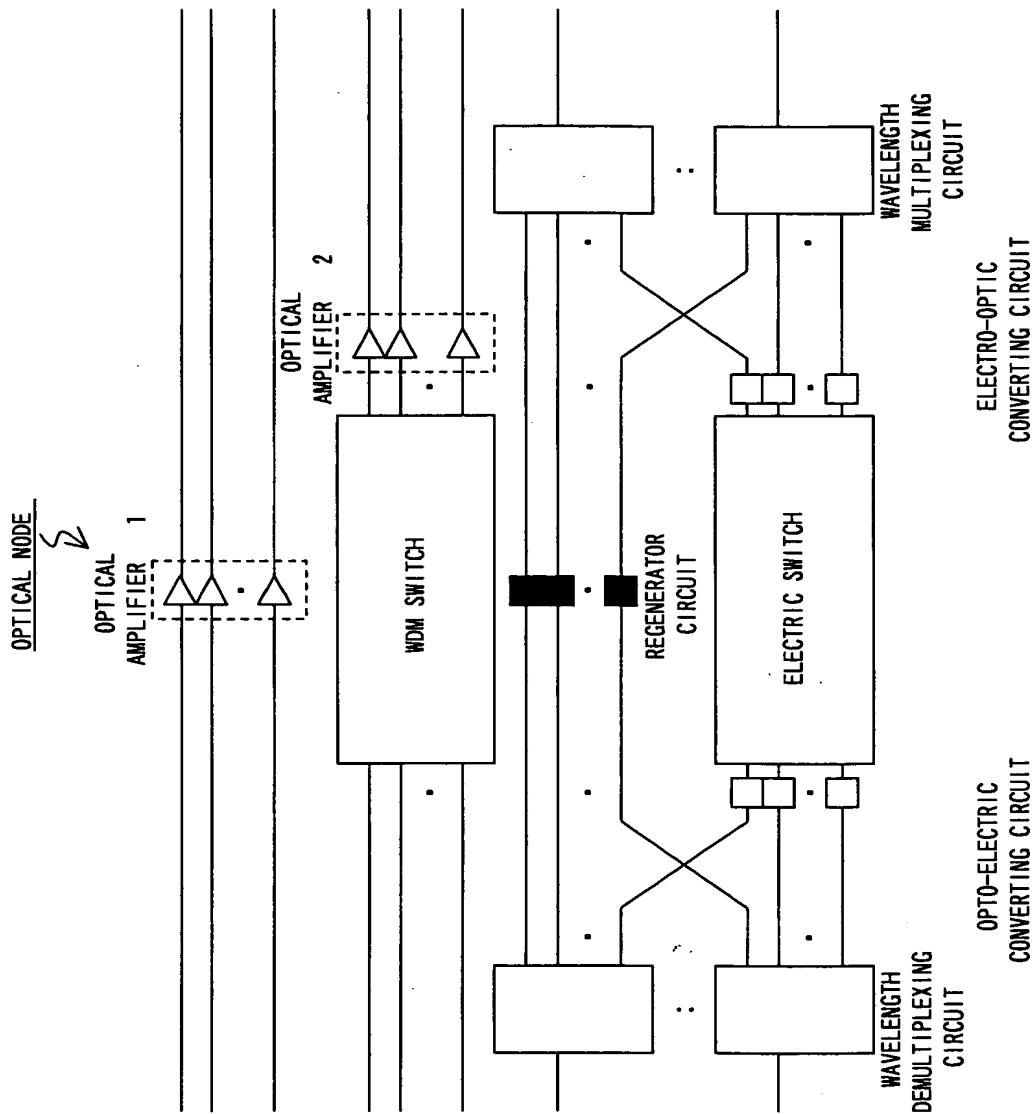


FIG. 41

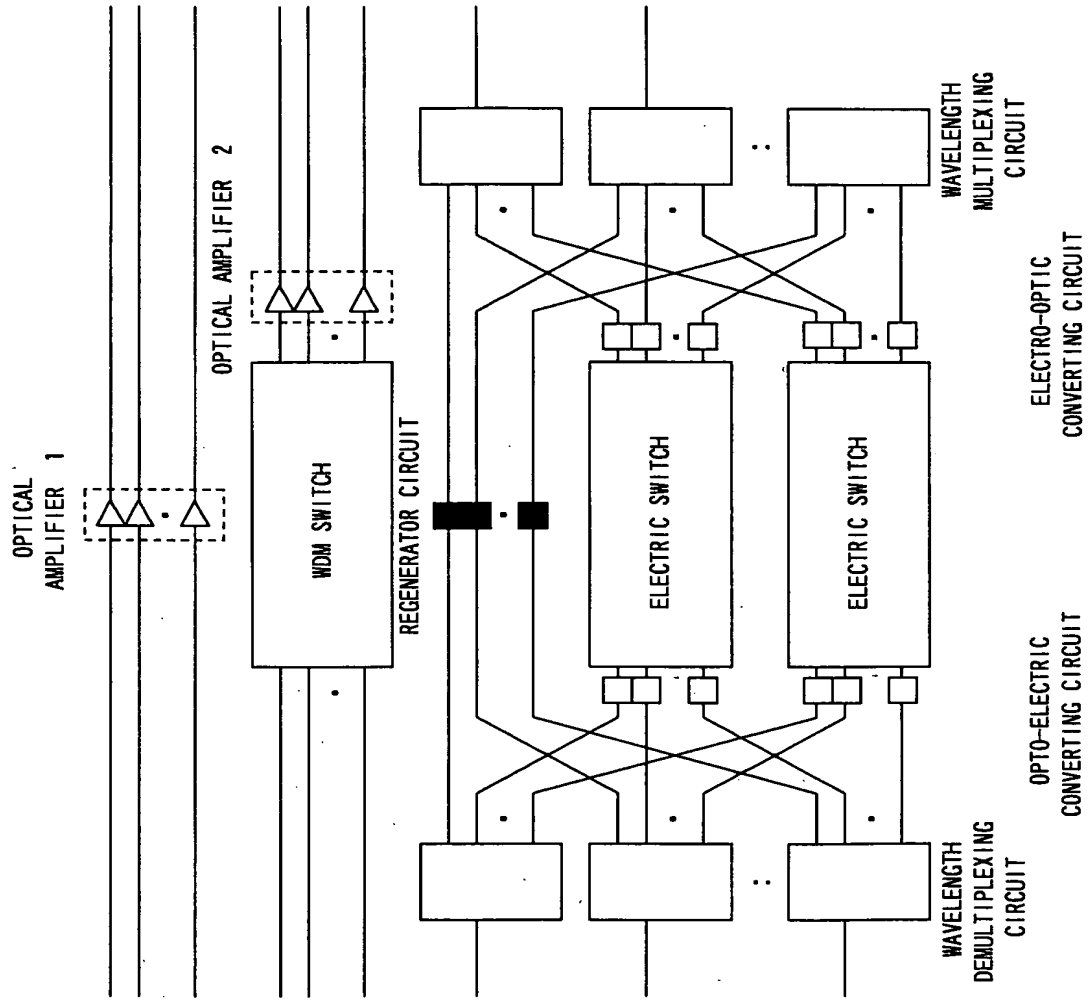


FIG. 42

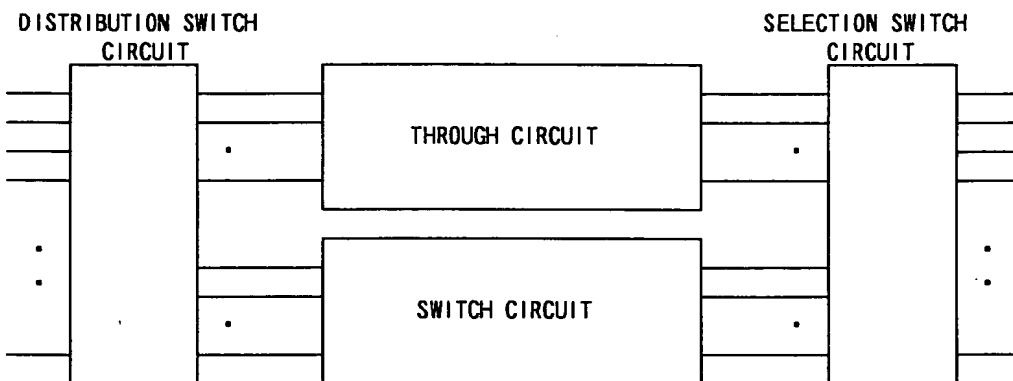
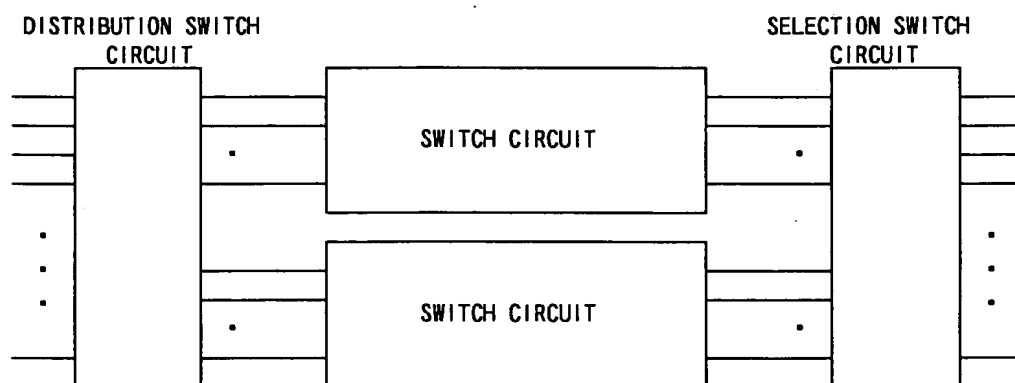
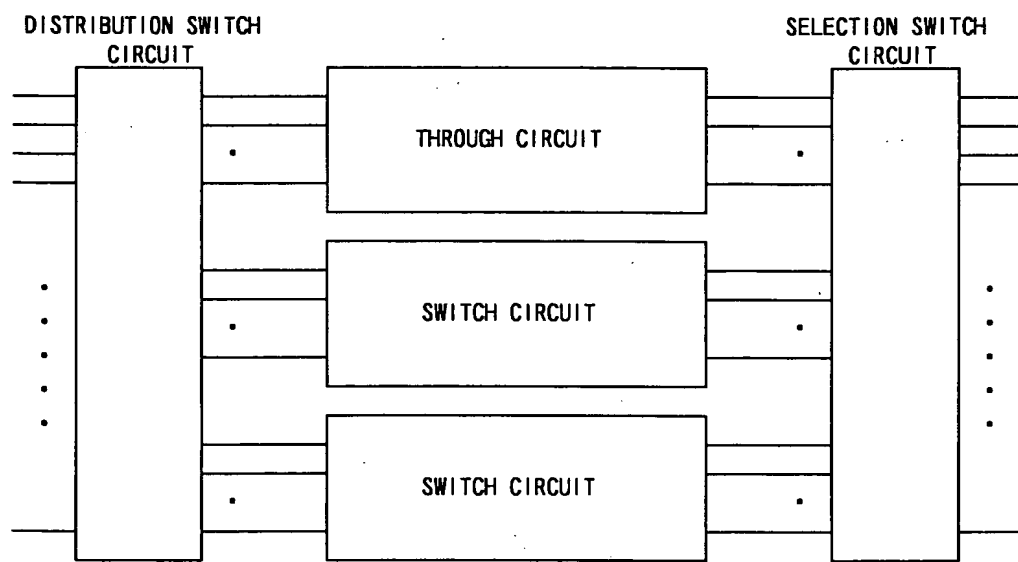
[illegible]

FIG. 43

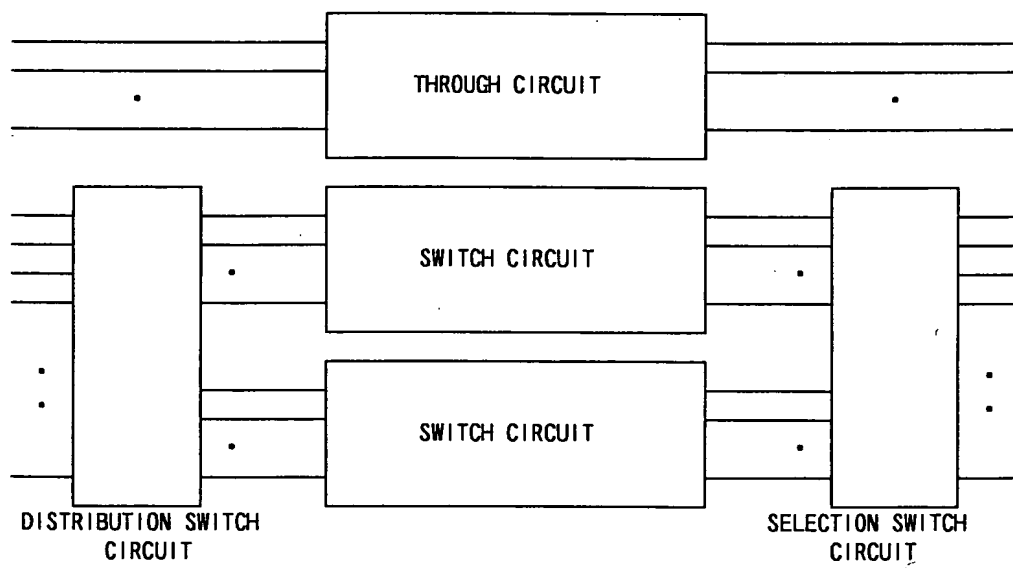
FIG. 44





F I G. 4 5

000001" 90614260



F I G . 4 6

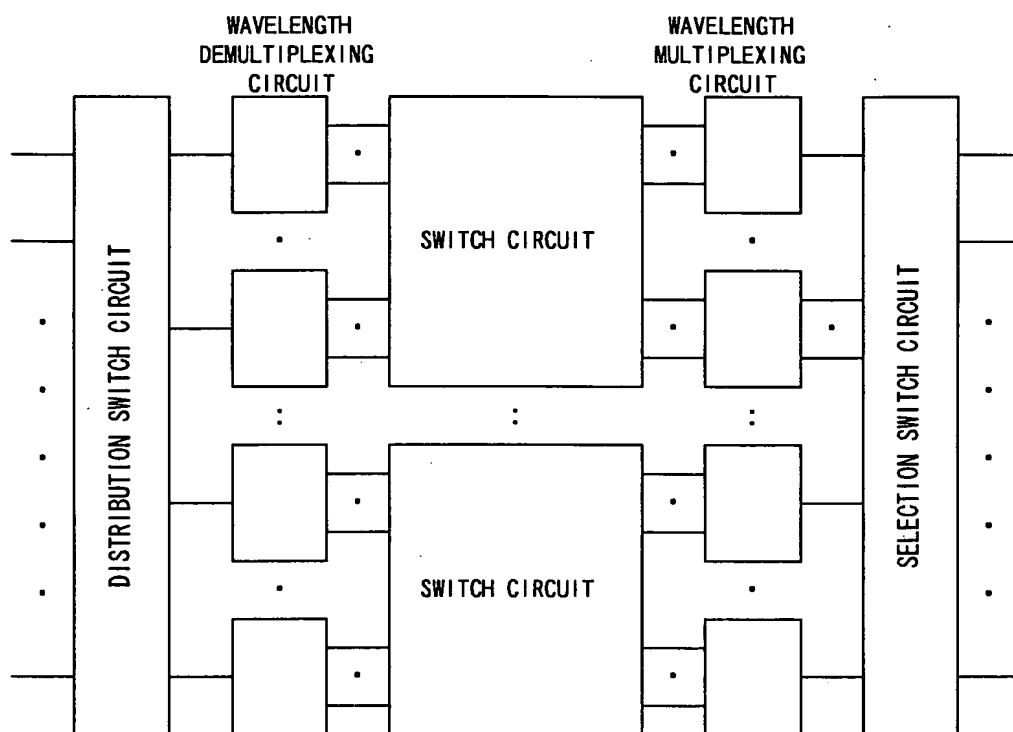
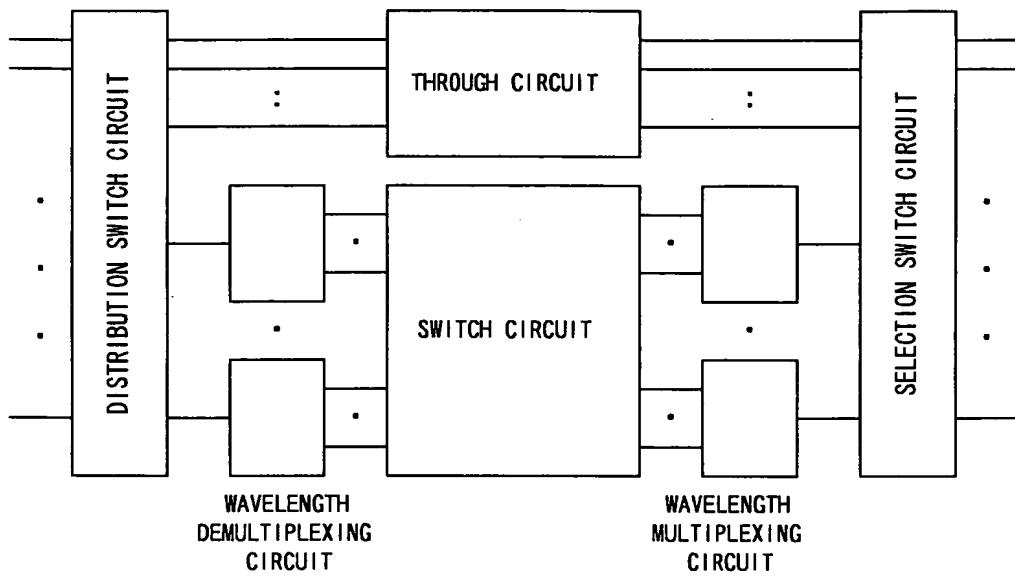


FIG. 47

[illegible]

F I G. 48

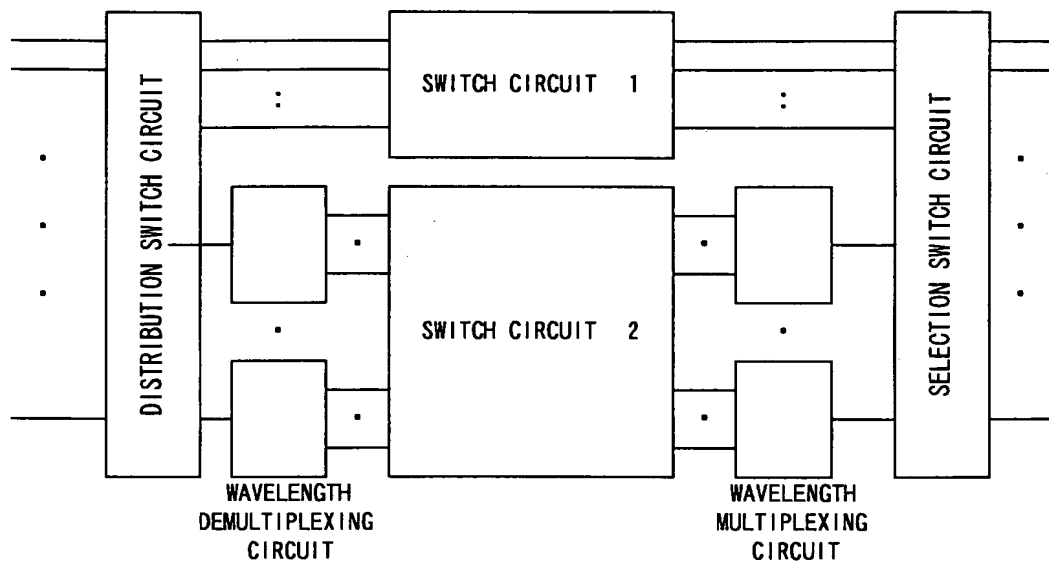


FIG. 49

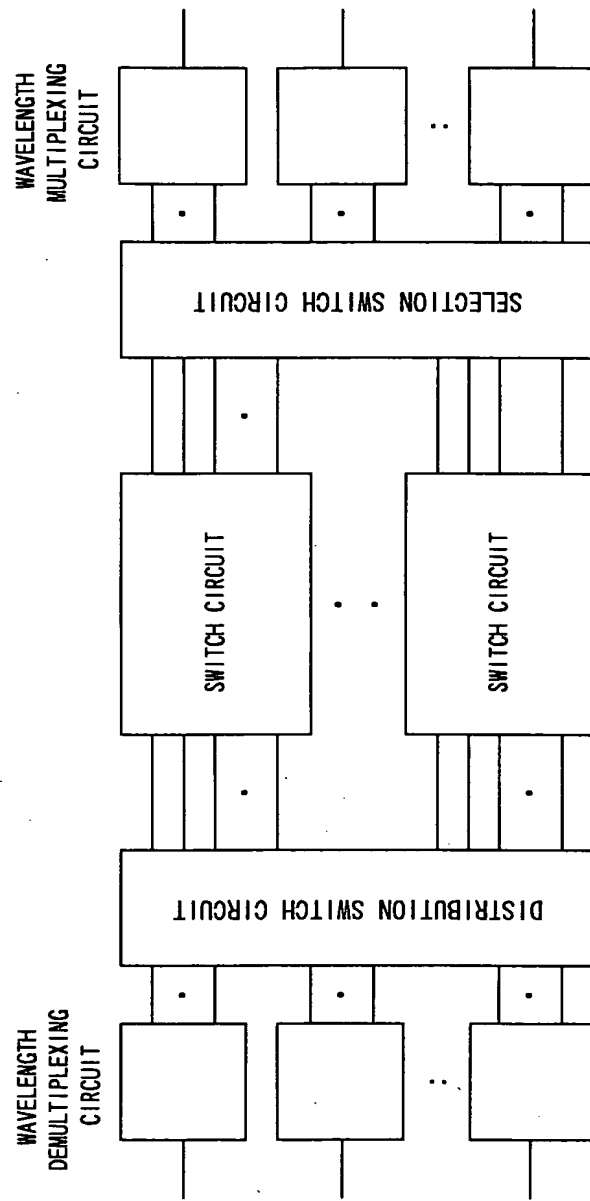


FIG. 50

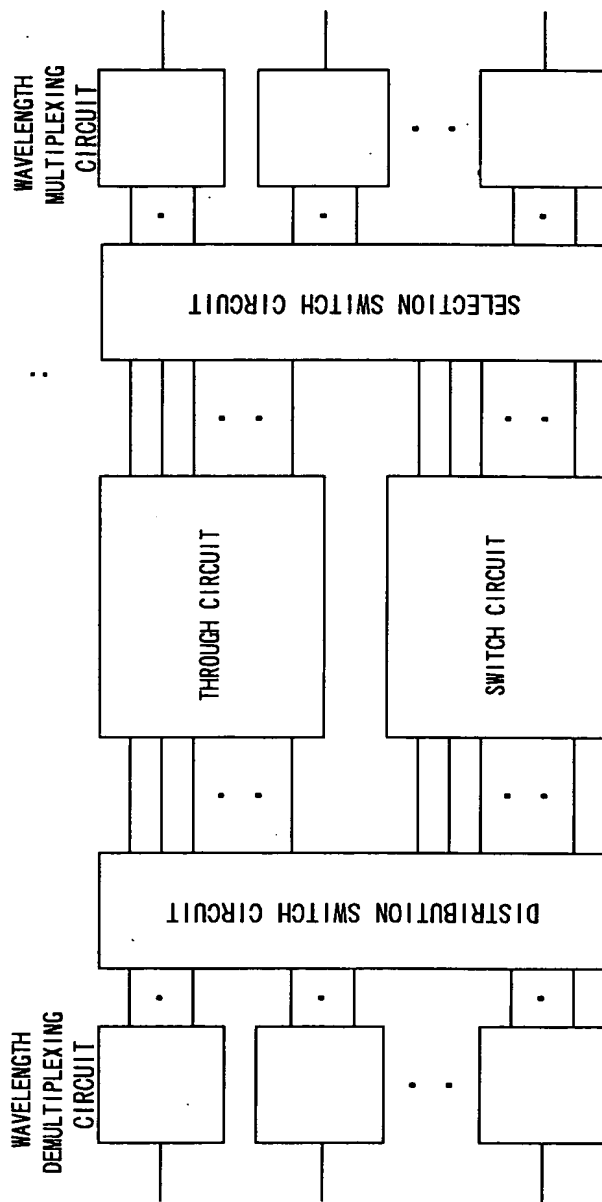


FIG. 51

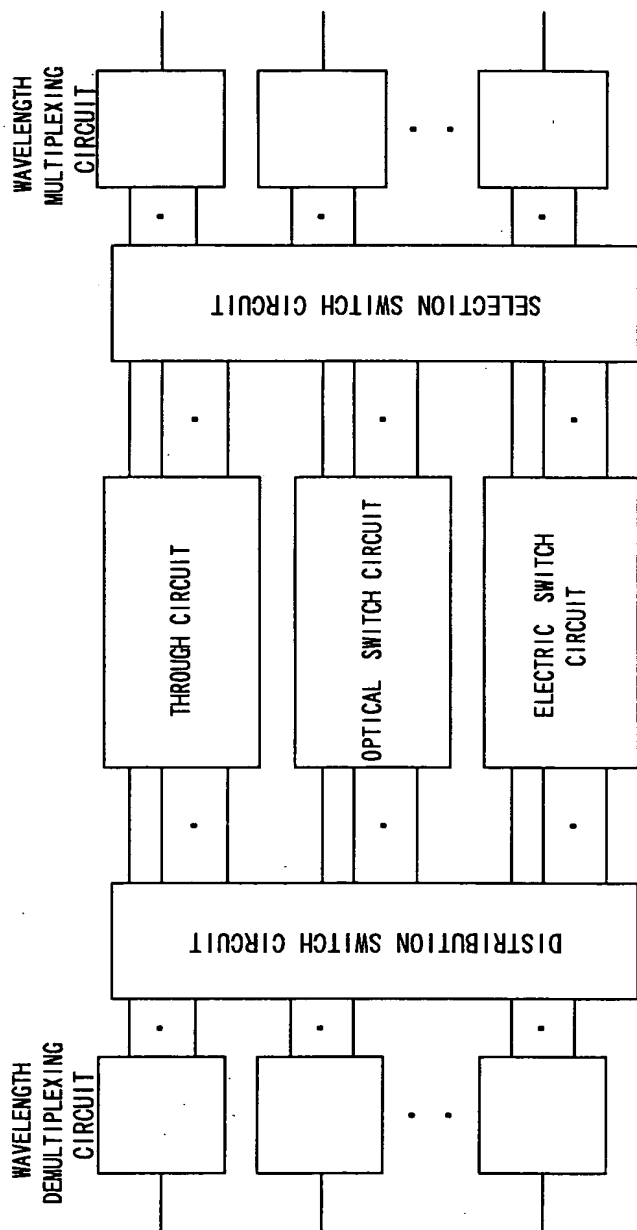


FIG. 52

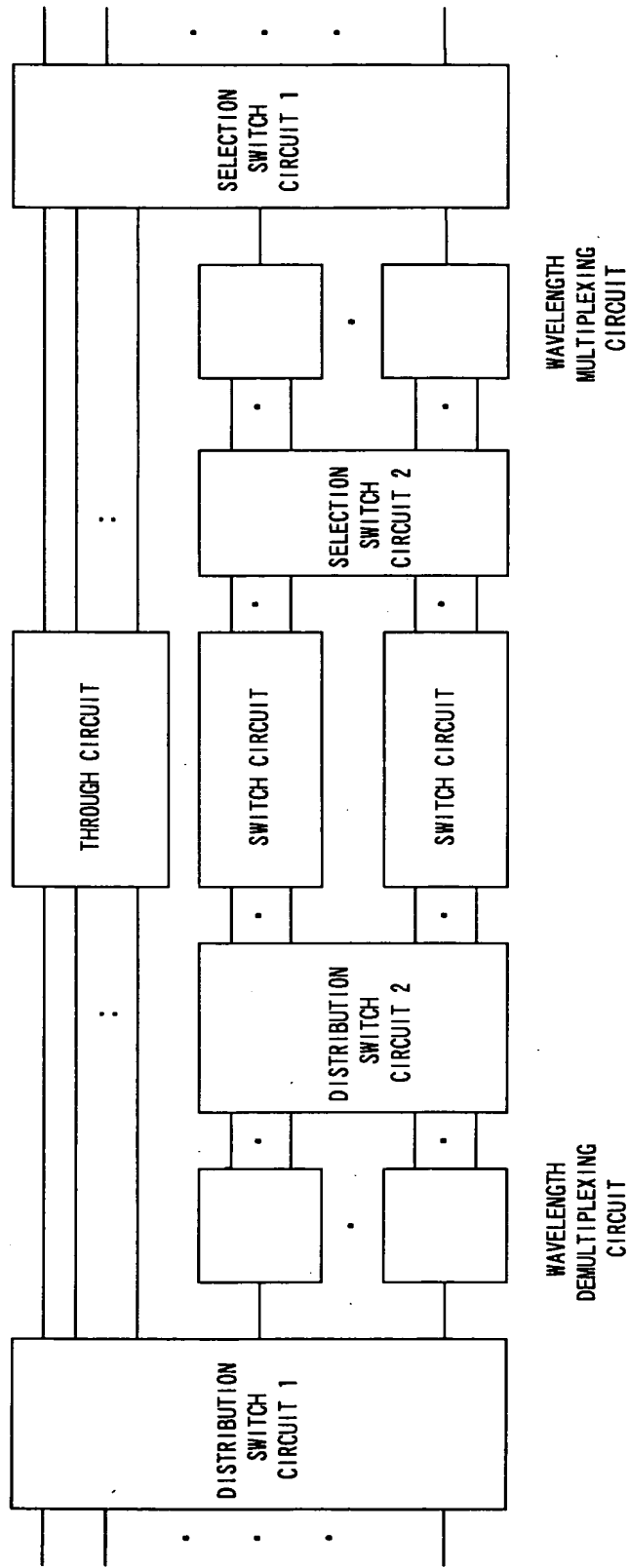


FIG. 53

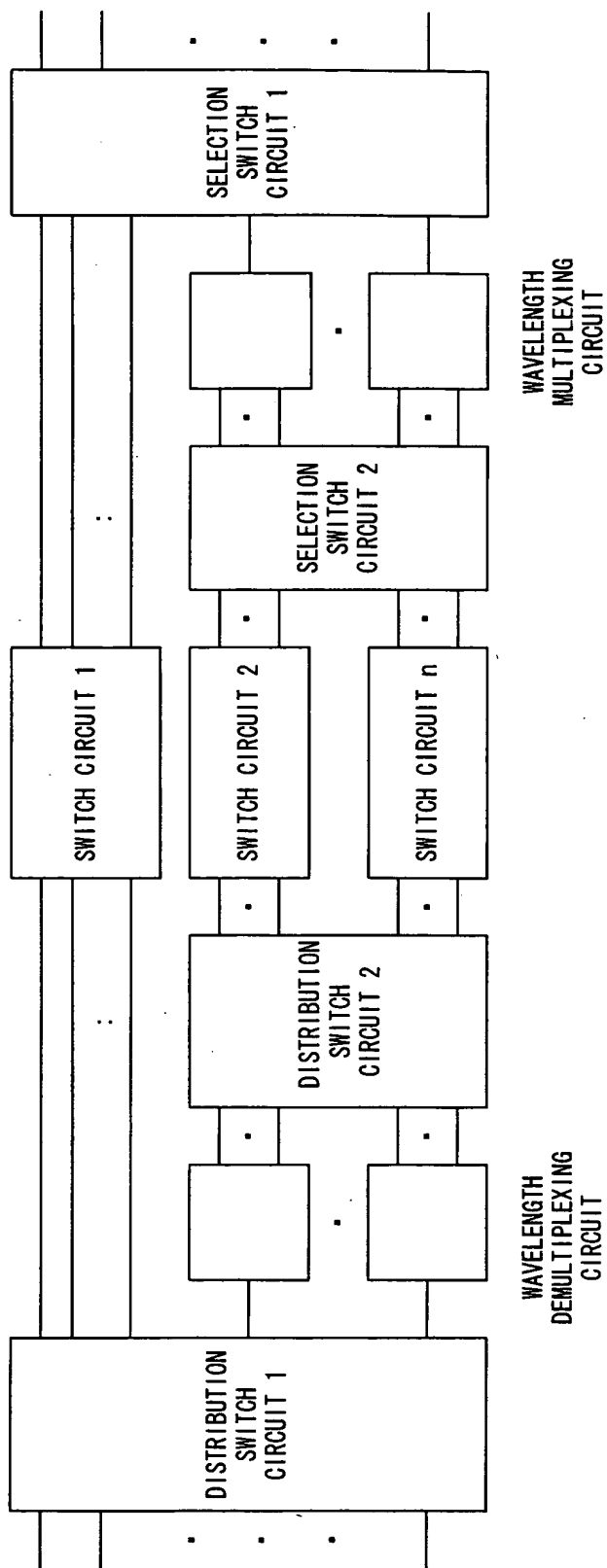


FIG. 54

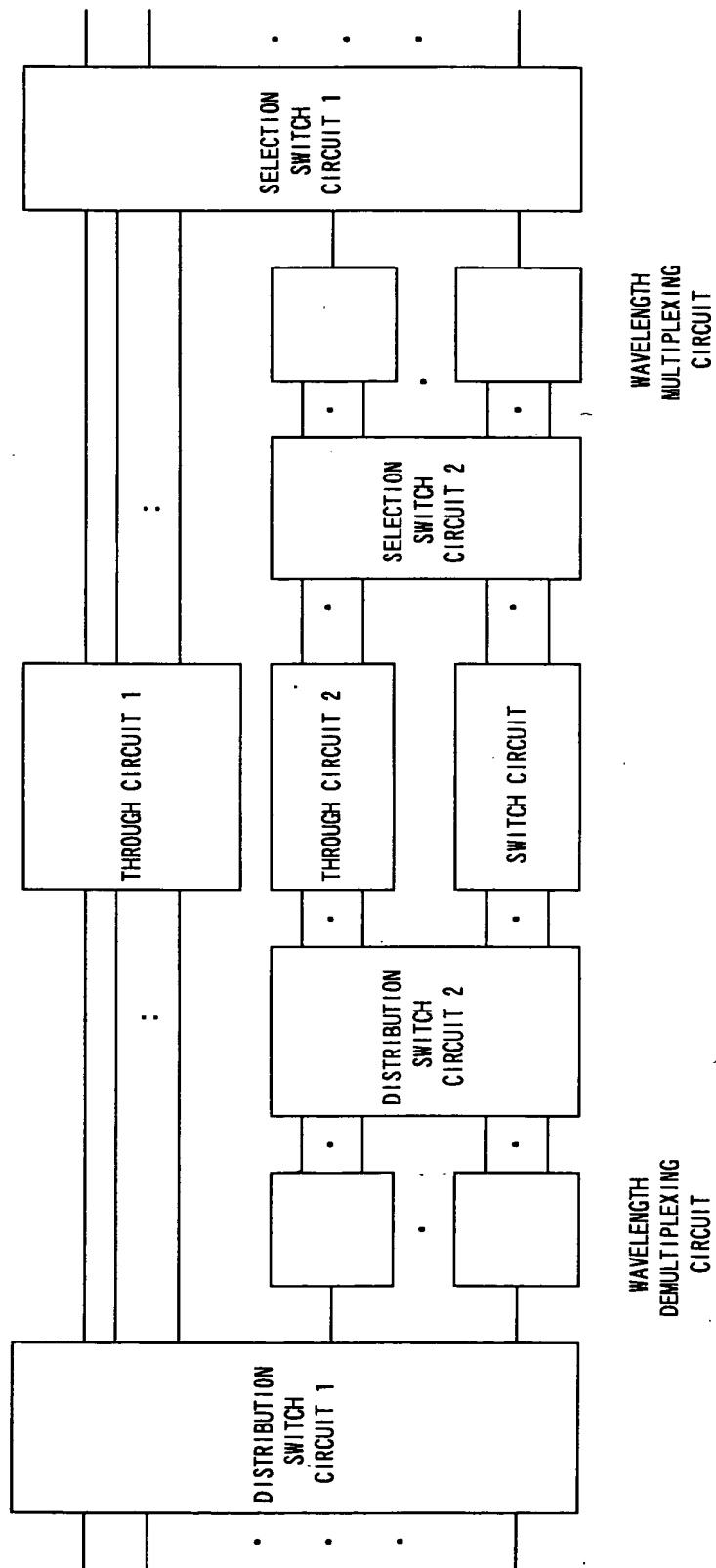


FIG. 55

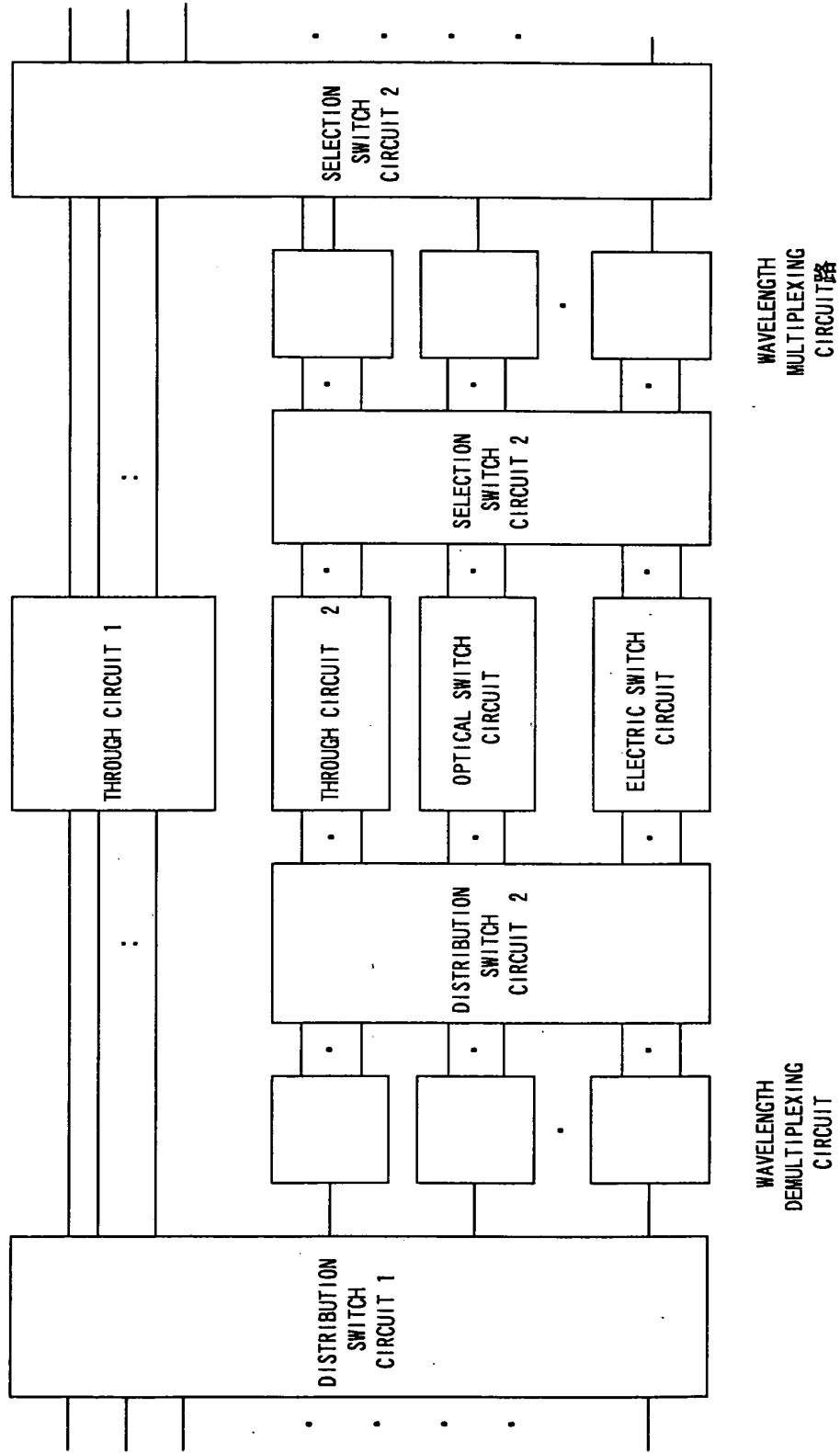


FIG. 56

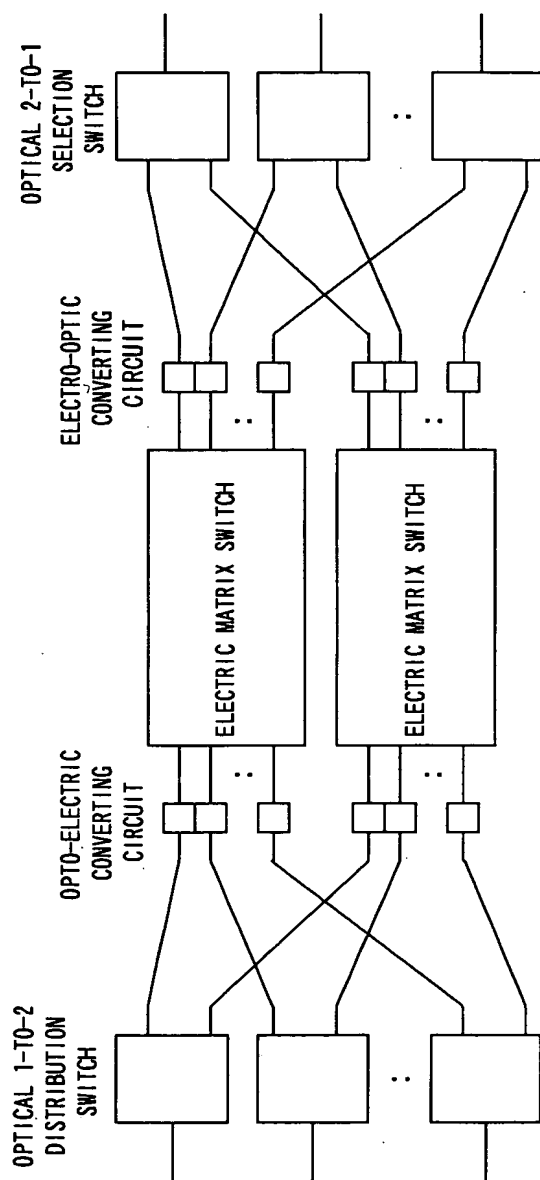
[illegible]

FIG. 57

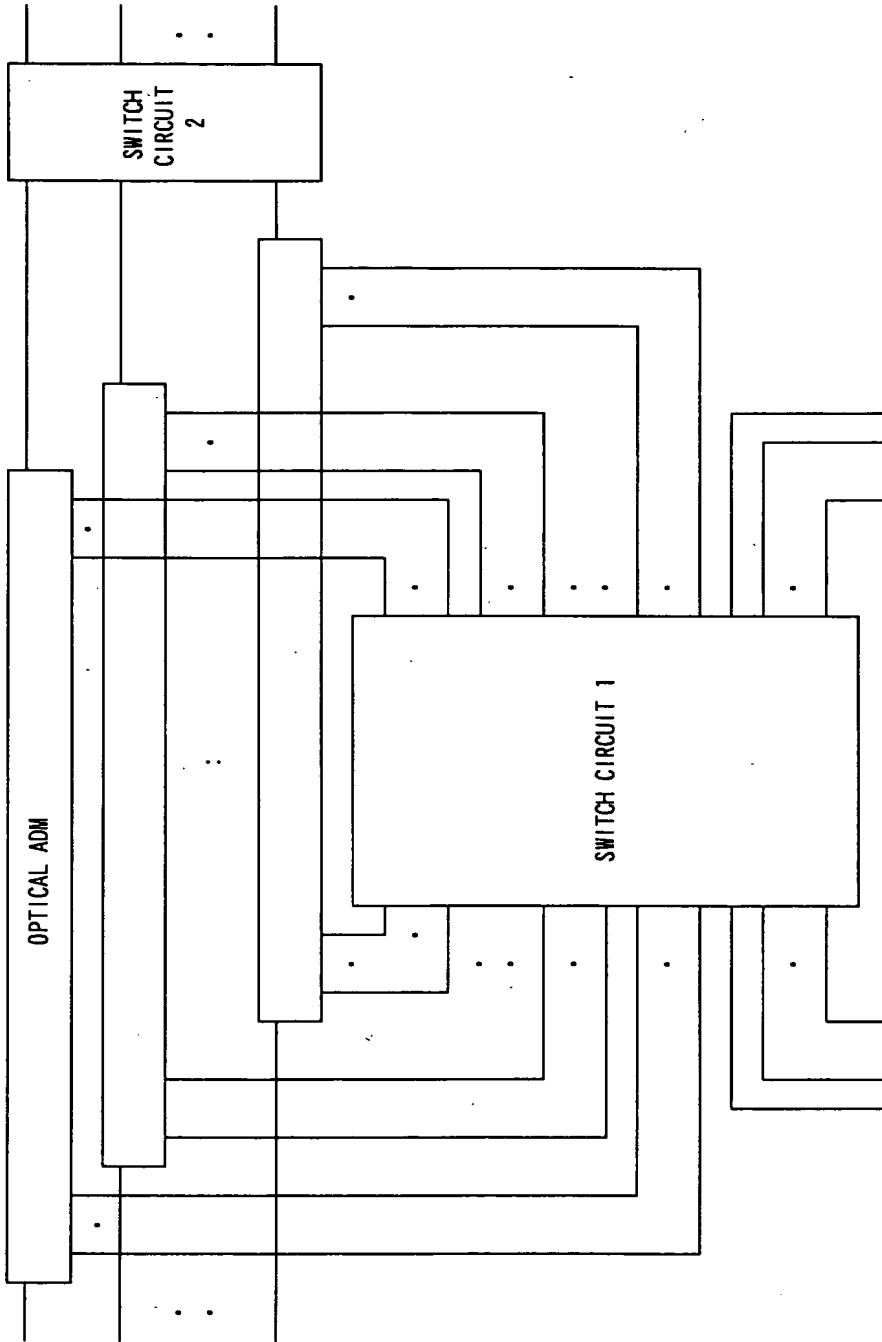


FIG. 59

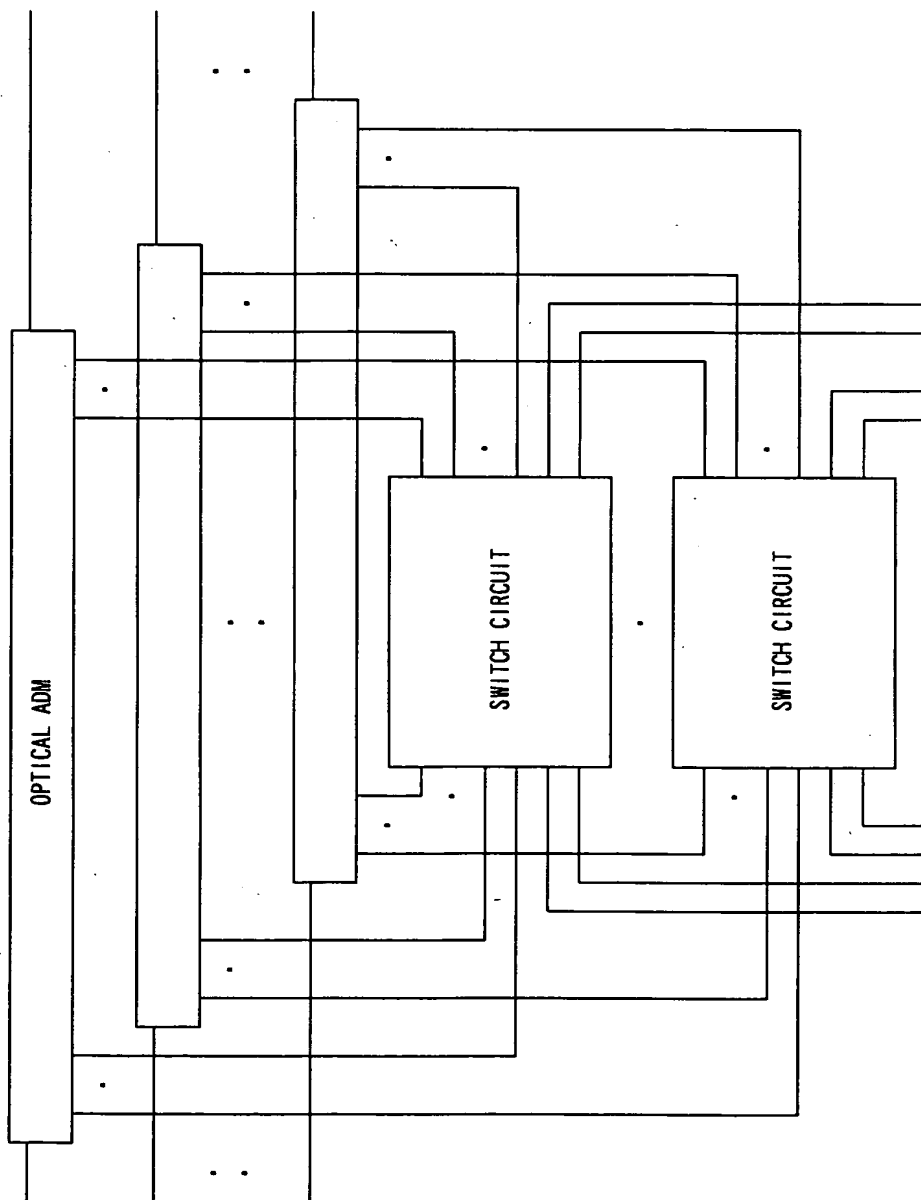


FIG. 60

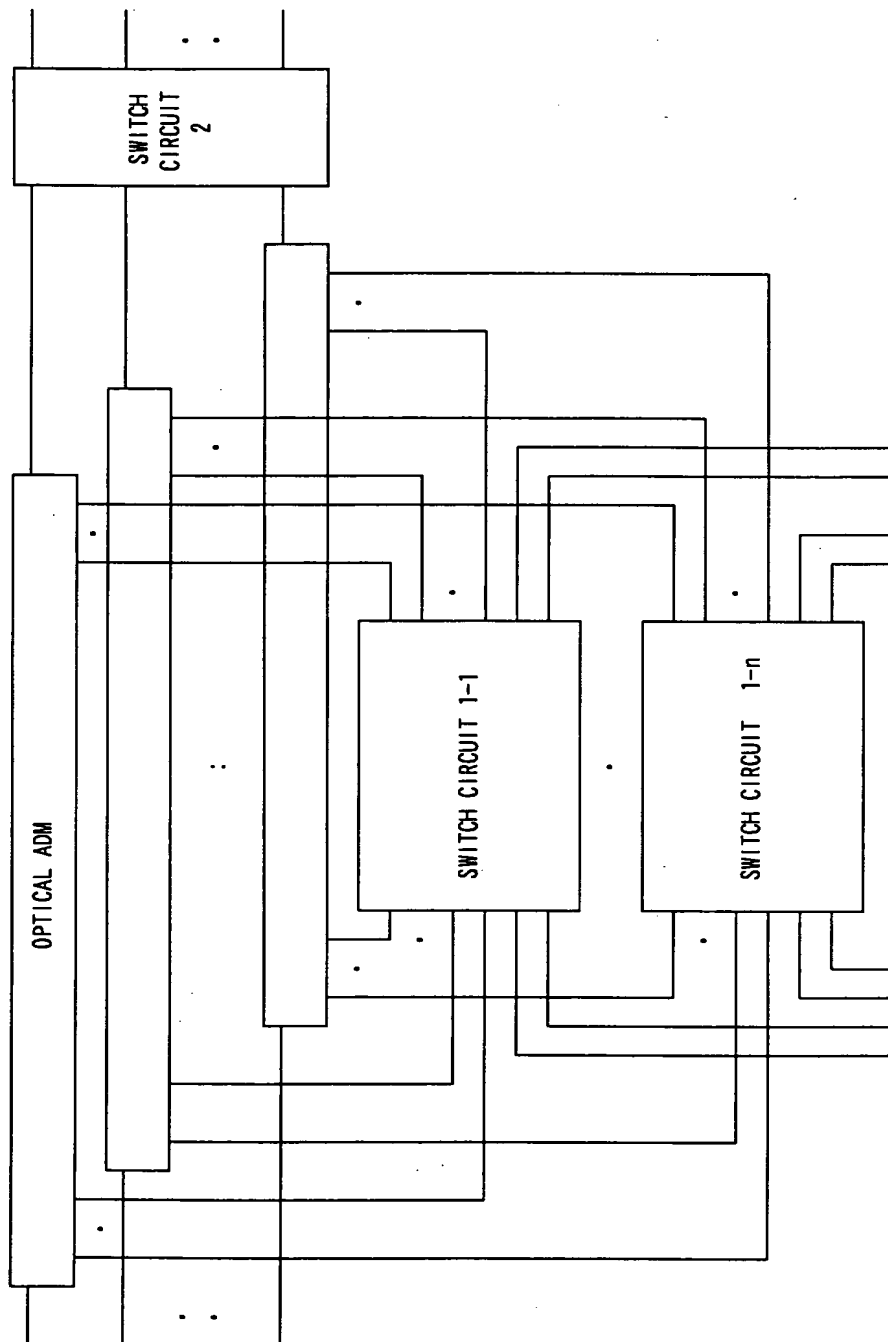


FIG. 61

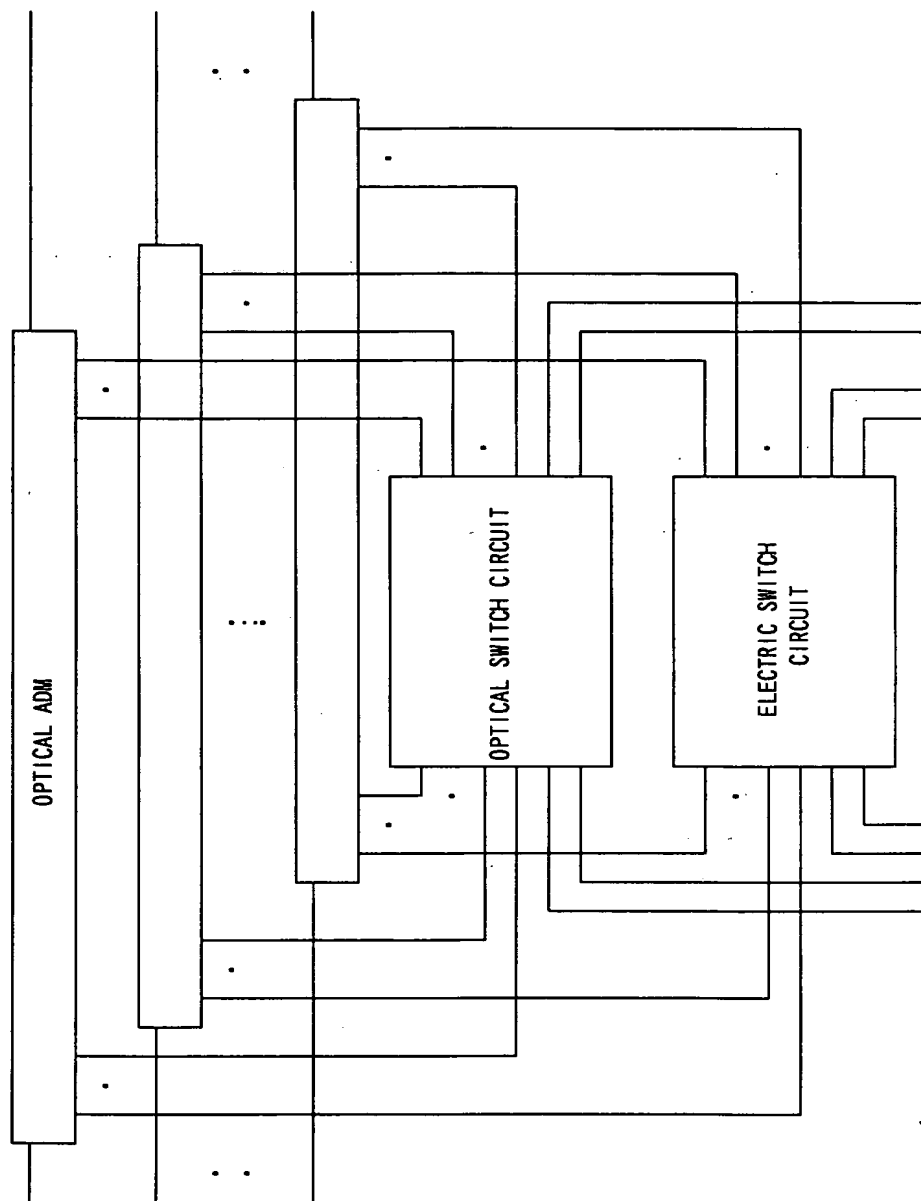


FIG. 62

400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500

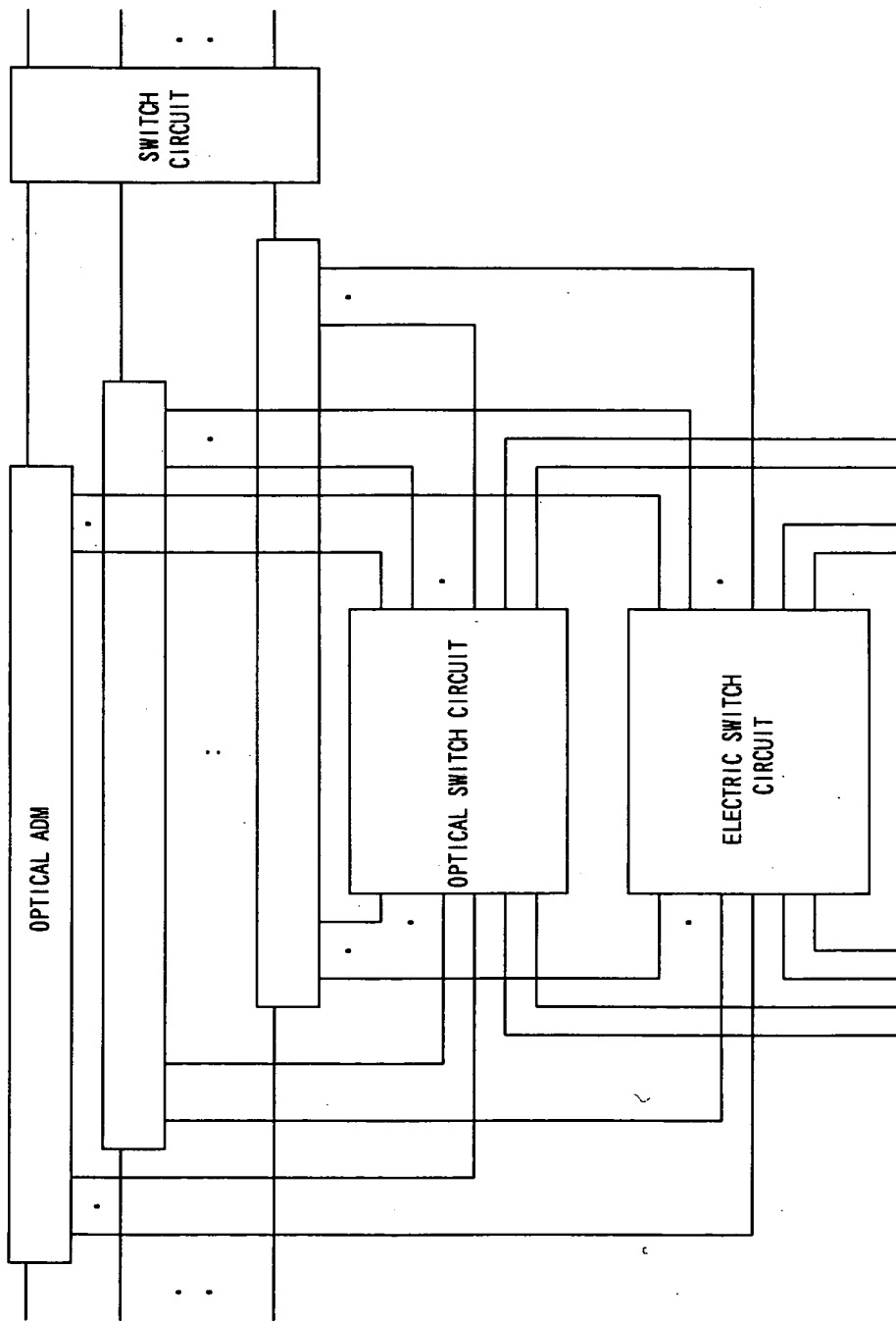


FIG. 63

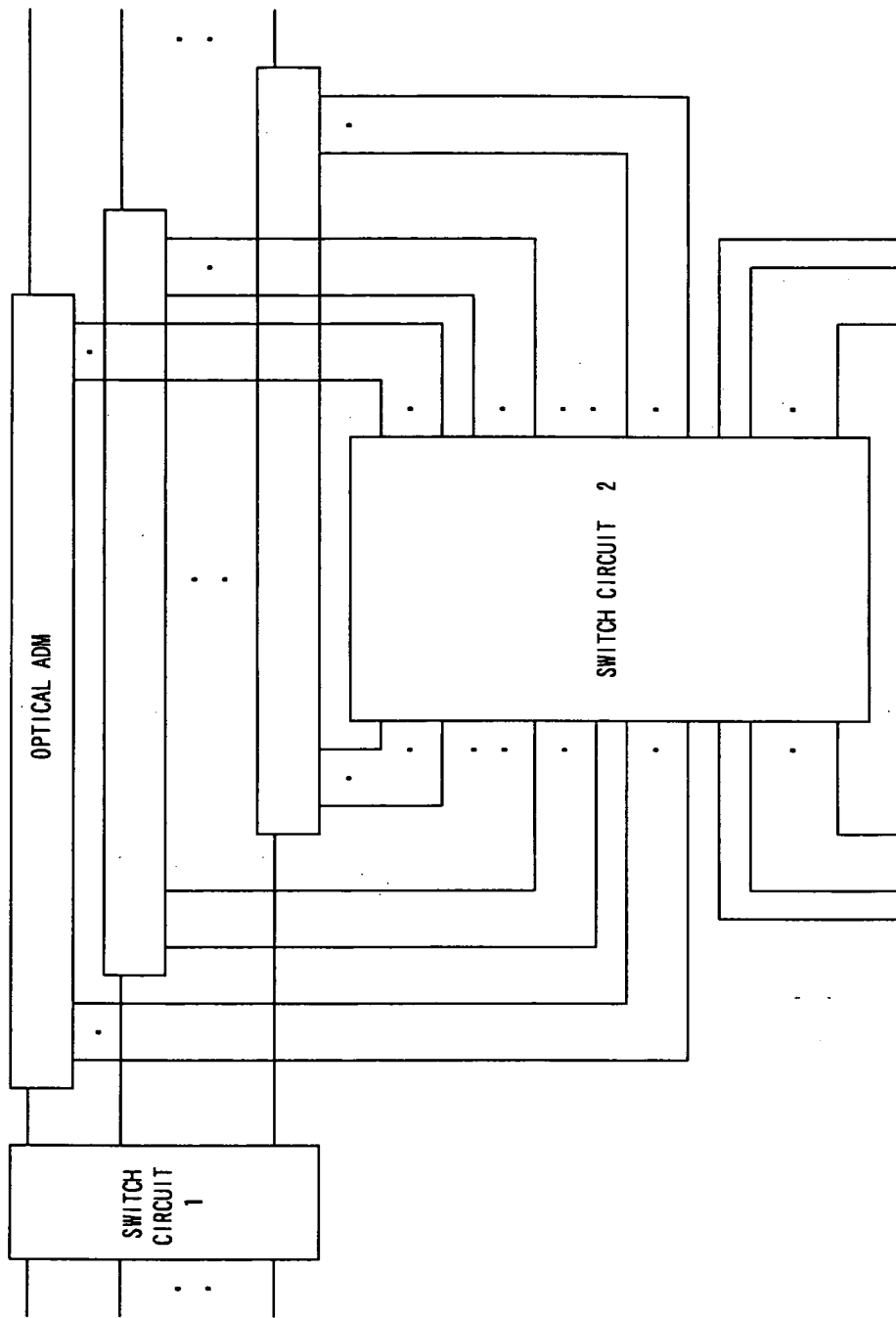


FIG. 64

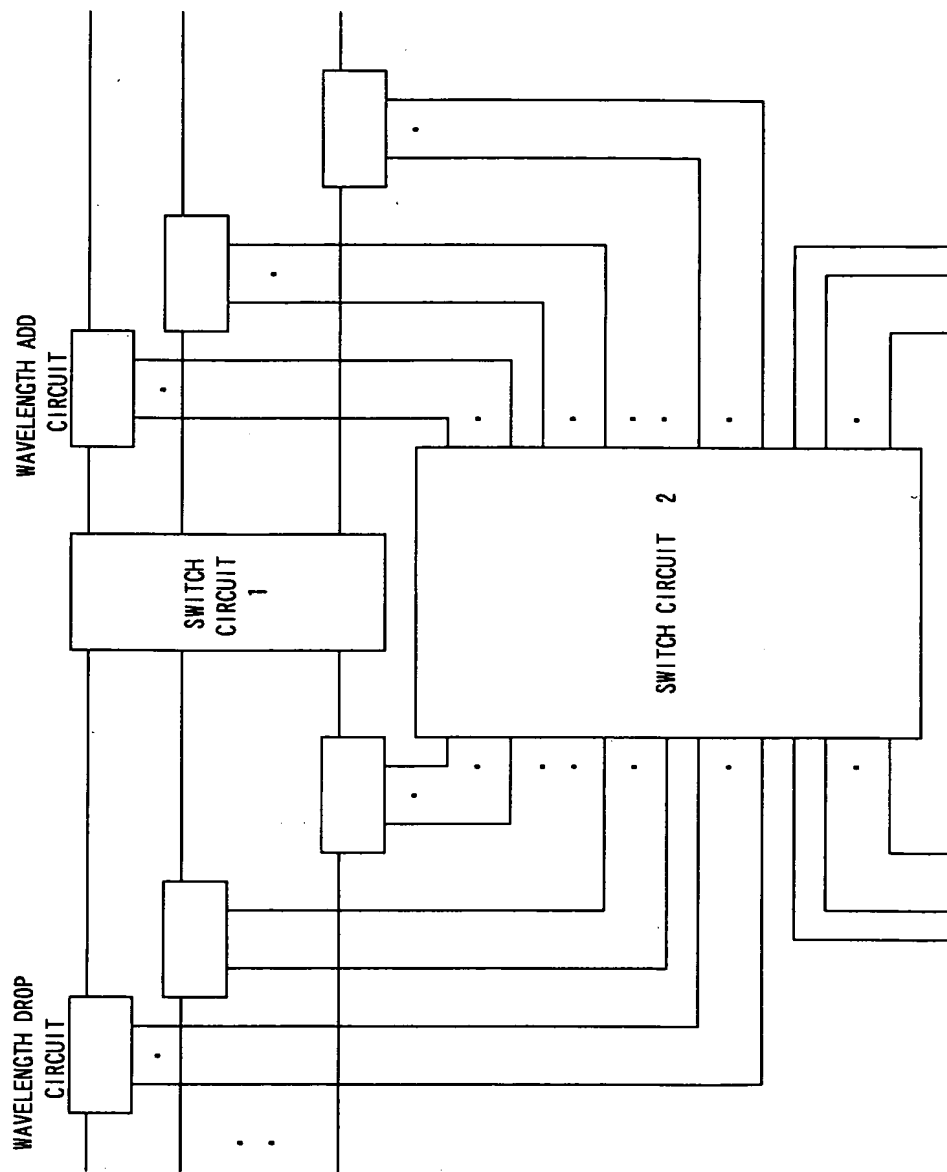


FIG. 65

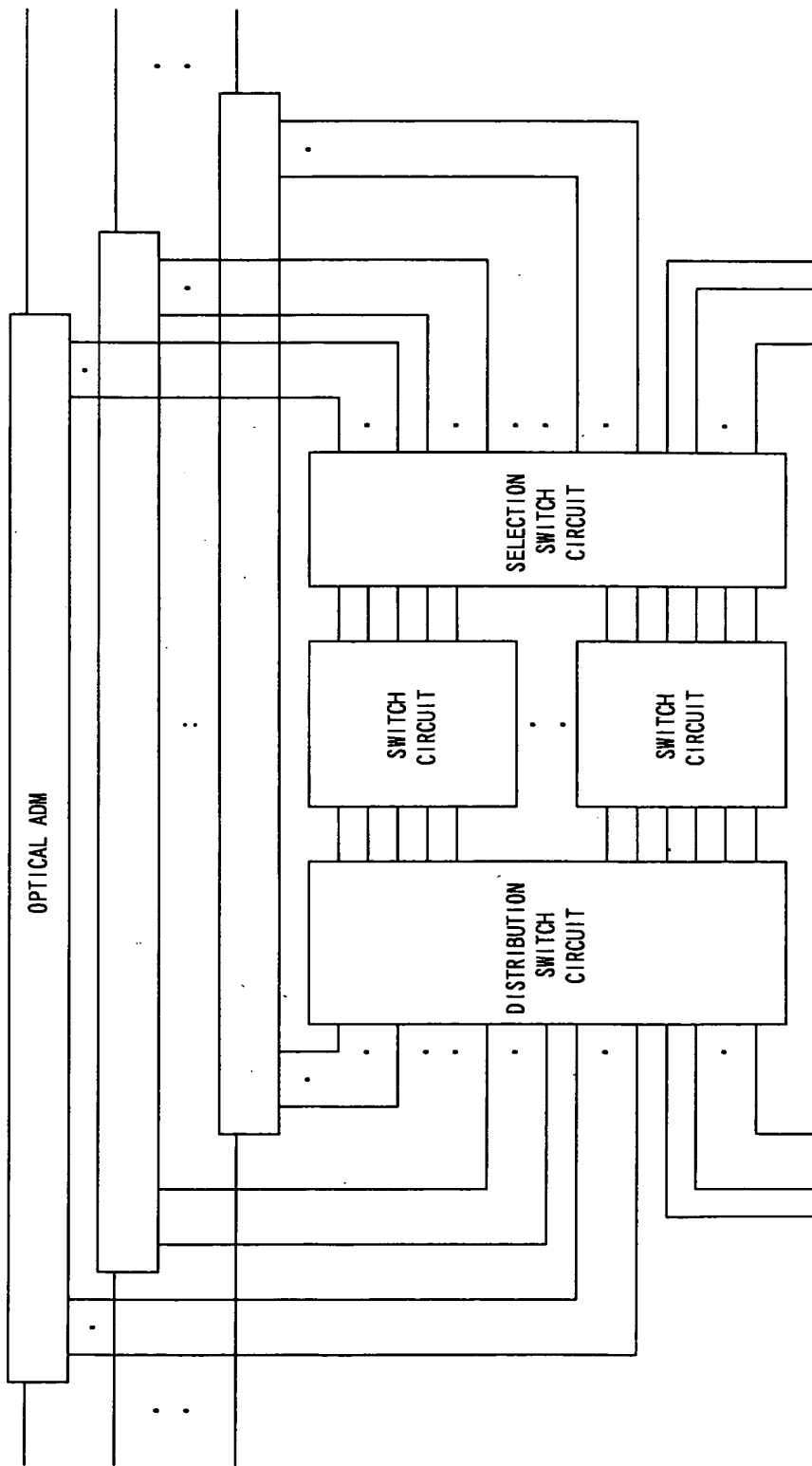


FIG. 66

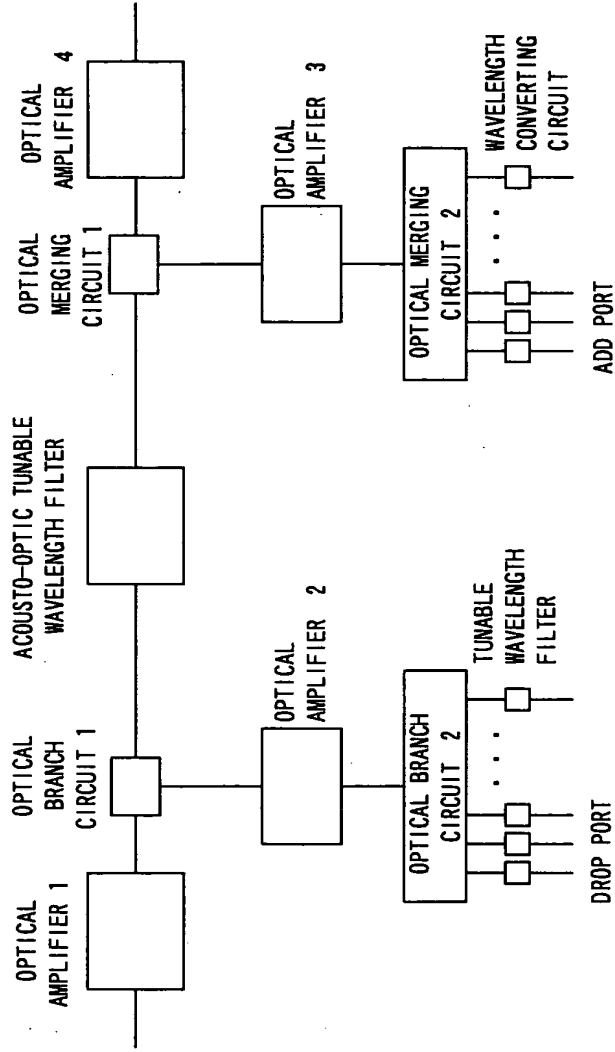


FIG. 67

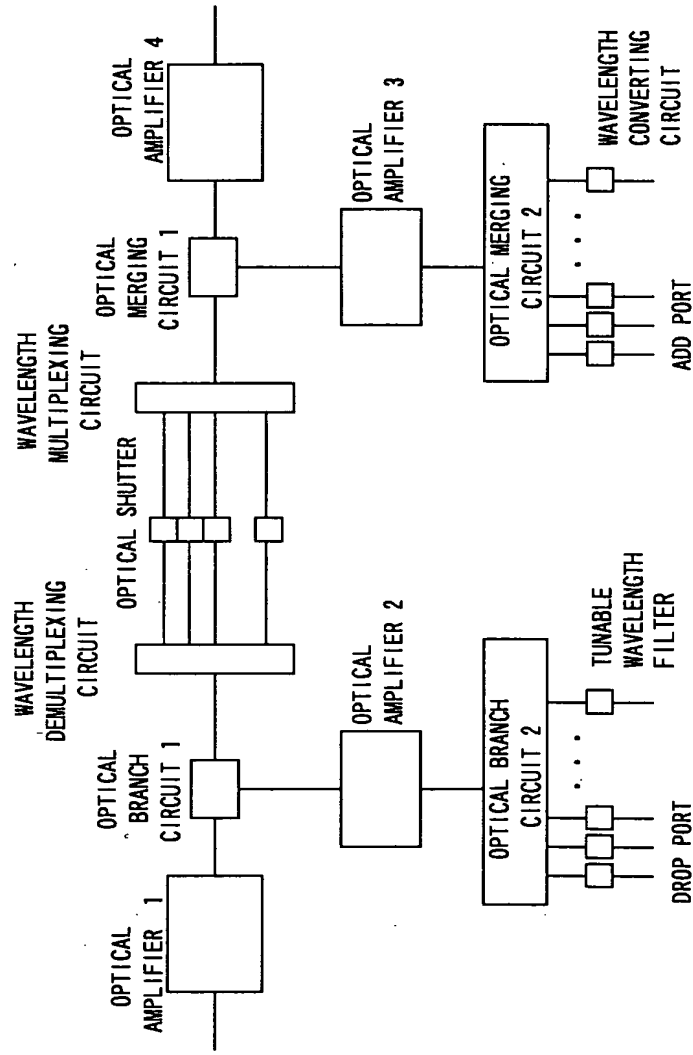


FIG. 68